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BIRD'S-EYE VIEW OF THE CAMPUS OF THE UNIVERSITY OF MICHIGAN

CATALOGUE

OF THE

UNIVERSITY OF MICHIGAN Univ.

1916-1917

ANN ARBOR
PUBLISHED BY THE UNIVERSITY
1917

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Announcements

1916-1917 and 1917-1918

1916

July 3–August 25.	Summer Session in the Colleges of Literature, Science, and the Arts, of Engineering, and of Pharmacy.
July 3–August 11.	Summer Session in the Medical Schools.
June 26–Sept. 1.	Summer Session in the Law School.
October 3.	FIRST SEMESTER BEGINS IN ALL SCHOOLS AND COLLEGES OF THE UNIVERSITY.
November 30.	Holiday, Thanksgiving Day.
December 20.	(Noon) Holiday Vacation begins.

1917

January 4.	(Morning) Exercises resumed.
February 9.	(Evening) FIRST SEMESTER CLOSES.
February 8–10.	*Examinations for Admission to all the Colleges.*
February 12.	SECOND SEMESTER BEGINS.
February 22.	Holiday, Washington's Birthday.
April 6.	(Evening) Recess begins, ending April 16 (evening).
May 30.	Holiday, Memorial Day.
June 24.	*Baccalaureate Address, to be delivered by the Rev. Hugh Black, D.D., Professor in Union Theological Seminary, New York, N. Y.*
June 25–26.	*Class Day Exercises in the several Schools and Colleges.*
June 25–August 31.	Summer Session in the Law School.
June 26–27.	*Alumni Days.*
June 28.	COMMENCEMENT. The Commencement Oration is to be delivered by Harry Burns Hutchins, LL.D., President of the University.

July 2–August 24.	Summer Session in the Colleges of Literature, Science, and the Arts, of Engineering and Architecture, and of Pharmacy, and the Graduate School.
July 2–August 10.	Summer Session in the Medical Schools.
September 24–28.	*Examinations for Admission to all the Colleges of the University.*
October 2.	FIRST SEMESTER BEGINS IN ALL SCHOOLS AND COLLEGES OF THE UNIVERSITY.
November 29.	Holiday, Thanksgiving Day.
December 19	(Evening) Holiday Vacation begins.
1918	
January 3.	(Morning) Exercises resumed.
February 8.	(Evening) FIRST SEMESTER CLOSES.
February 7–9.	*Examinations for Admission to all the Colleges.*
February 11.	SECOND SEMESTER BEGINS.
February 22.	Holiday, Washington's Birthday.
April 5.	(Evening) Recess begins, ending April 15 (evening).
May 30.	Holiday, Memorial Day.
June 27.	COMMENCEMENT.
July 1.	Summer Session begins in all the Schools and Colleges (except Law).
September 23–27.	*Examinations for Admission to all Colleges.*
October 1.	FIRST SEMESTER BEGINS IN ALL SCHOOLS AND COLLEGES.

1917

JANUARY

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Days of regular college session are printed in Light face type; Sundays, holidays, and vacations in Dark face.

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PRESIDENT.

	TERM EXPIRES
HON. WILLIAM L. CLEMENTS, *Bay City*	Dec. 31, 1917
HON. HARRY C. BULKLEY, *Detroit*	Dec. 31, 1917
HON. BENJAMIN S. HANCHETT, *Grand Rapids*	Dec. 31, 1919
HON. LUCIUS L. HUBBARD, *Houghton*	Dec. 31, 1919
HON. WALTER H. SAWYER, *Hillsdale*	Dec. 31, 1921
HON. VICTOR M. GORE, *Benton Harbor*	Dec. 31, 1921
HON. JUNIUS E. BEAL, *Ann Arbor*	Dec. 31, 1923
HON. FRANK B. LELAND, *Detroit*	Dec. 31, 1923

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SUPERINTENDENT OF PUBLIC INSTRUCTION.

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TREASURER OF THE BOARD.

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For 1916 and 1917

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REGENTS LELAND and SAWYER.

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REGENTS BEAL and HUBBARD.

Colleges of Engineering and Architecture
REGENTS HUBBARD and LELAND.

Medical School, Colleges of Pharmacy and Dental Surgery
REGENTS SAWYER and BEAL.

Law School
REGENTS BULKLEY and GORE.

Homoeopathic Medical School
REGENTS HANCHETT and GORE.

Graduate School and Summer Session
REGENTS HANCHETT and BEAL.

Library
REGENTS CLEMENTS and HUBBARD.

Museum and Observatory
REGENTS BULKLEY and LELAND.

Auditorium and Memorial Hall
REGENTS GORE and HANCHETT.

Buildings and Grounds
REGENTS CLEMENTS and HANCHETT.

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† The dagger preceding a name indicates that the member of the Faculty is absent on leave.

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---

‡ Died December 12, 1916.

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LEROY NELSON PATTISON, B.D., A.M., *Assistant Curator of the Alumni Memorial Hall.*

NORMAN ASA WOOD, *Curator and Taxidermist.*

CRYSTAL THOMPSON, A.M., *Assistant in the Museum.*

FREDERICK McMAHON GAIGE, A.B., *Assistant in the Museum.*

HELEN THOMPSON GAIGE, A.M., *Assistant in the Museum.*

HENRY JULIUS COLLIAU, *Instrument Maker and Designer at the Observatory.*

EMIL J. COLLIAU, *Instrument Maker at the Observatory.*

BRYANT WALKER, A.B., LL.B., Detroit, *Honorary Curator of Mollusca.*

WILLIAM W. NEWCOMB, B.S., M.D., Detroit, *Honarary Curator of Lepidoptera.*

ARTHUR S. PEARSE, Ph.D., Madison, Wis., *Honorary Curator of Crustacea.*

BRADSHAW HALL SWALES, LL.M., Grosse Isle, *Honorary Associate in the Museum.*

ARTHUR W. ANDREWS, Detroit, *Honorary Associate in the Museum.*

CHARLES KEENE DODGE, A.B., Port Huron, *Honorary Associate in the Museum.*

Hospitals

RUSSELL EBENEZER ATCHISON, M.D., *Superintendent of the University Homoeopathic Hospital.*

ROBERT GEORGE GREVE, *Superintendent of the University Hospital.*

GENEVIEVE REED, *Principal of the Training School for Nurses in the University Homoeopathic. Hospital.*

FANTINE PEMBERTON, *Principal of the Training School for Nurses in the University Hospital.*

JAMES PERRY BRIGGS, Ph.C., *Pharmacist in the University Hospital.*

WILLIAM HENRY GORDON, B.S., M.D., *House Physician in the University Hospital.*

LLOYD RALPH CLAY, M.D., *Interne in the University Homoeopathic Hospital.*

DAVID BENJAMIN HAGERMAN, M.D., *Interne in the University Homoeopathic Hospital.*

PHILIP EGGLESTON HAYNES, A.B., M.D., *Interne in the University Homoeopathic Hospital.*

Gymnasiums

GEORGE AUGUSTUS MAY, M.D., *Director of the Waterman Gymnasium.*

PHILIP GEORGE BARTELME, *Director of Outdoor Athletics.*

ALICE EVANS, A.B., *Director of the Barbour Gymnasium.*

STEPHEN JOHN FARRELL, *Instructor in Physical Training.*

MARIAN O. WOOD, *Instructor in Physical Education.*

ROBERT ALAN AMBLER, A.B., *Instructor in Physical Training.*

MARION DAWLEY, *Teaching Assistant in Physical Education.*

University Health Service

HOWARD HASTINGS CUMMINGS, M.D., *Executive Head and Physician to the University Health Service.*

ELSIE SEELYE PRATT, B.L., M.D., *Physician to the University Health Service.*

CLYDE BRUCE STOUFFER, M.D., *Physician to the University Health Service.*

CHARLES PARMELEE DRURY, A.B., M.D., *Physician to the University Health Service.*

LUCY ELIZABETH BOLAND, M.D., *Physician to the University Health Service.*

LAWRENCE ATKINSON, Ph.C., *Pharmacist to the University Health Service.*

LESTER CLAIRE TODD, A.B., *Technical Assistant to the University Health Service.*

DAISY M. ANDRUS, *Clerk to the University Health Service.*

Board in Control of Athletics

PROFESSORS R. W. AIGLER, *Chairman,* R. PETERSON, L. M. GRAM, and W. T. FISHLEIGH; DIRECTOR, P. G. BARTELME; ALUMNI MEMBERS, JOHN D. HIBBARD, JAMES E. DUFFY, and JAMES O. MURFIN; UNDERGRADUATE MEMBERS, WILLIS BRODHEAD, ALBERT E. STOLL, and JAMES W. THOMAS.

University of Michigan

THE UNIVERSITY AND THE STATE

The University of Michigan is a part of the public educational system of the State. The governing body of the institution is a Board of Regents, elected by popular vote for terms of eight years, as provided in the Constitution of the State. In accordance with the laws of the State, the University aims to complete and crown the work that is begun in the public schools by furnishing ample facilities for liberal education in literature, science, and the arts, and for thorough professional study of engineering, architecture, medicine, law, pharmacy, and dentistry. Through the aid that has been received from the United States and from the State, it is enabled to offer its privileges, with only moderate charges, to all persons of either sex, who are qualified for admission. While Michigan has endowed her University primarily for the higher education of her own sons and daughters, it must be understood that she also opens the doors of the institution to all students wherever their homes. It is in this broad, generous, and hospitable spirit that the University has been founded, and that it endeavors to do its work.

I. THE COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS.
II. THE COLLEGES OF ENGINEERING AND ARCHITECTURE.
III. THE MEDICAL SCHOOL.
IV. THE LAW SCHOOL.
V. THE COLLEGE OF PHARMACY.
VI. THE HOMOEOPATHIC MEDICAL SCHOOL.
VII. THE COLLEGE OF DENTAL SURGERY.
VIII. THE GRADUATE SCHOOL.

In a Summer Session regular courses of instruction are given in the College of Literature, Science, and the Arts, the Colleges of Engineering and Architecture, the Medical School, the Law School, the College of Pharmacy, the Homœopathic Medical School, and the Graduate School, together with a School of Library Methods and a Biological Station.

On the completion of prescribed courses of study degrees are conferred by the University as follows: In the College of Literature, Science, and the Arts, the degrees of Bachelor of Arts, and Bachelor of Science; in the Colleges of Engineering and Architecture, the degrees of Bachelor of Civil, Mechanical, Electrical, Chemical, Marine, and Architectural Engineering, and Bachelor of Architecture; in the Medical School, the degree of Doctor of Medicine; in the Law School, the degrees of Bachelor of Laws, Juris Doctor, and Master of Laws; in the College of Pharmacy, the degrees of Pharmaceutical Chemist, Bachelor of Science (in Pharmacy); in the Homœopathic Medical School, the degree of Doctor of Medicine; in the College of Dental Surgery, the degrees of Doctor of Dental Surgery and Doctor of Dental Science; in the Graduate School, the degrees of Master of Arts, Master of Science, Master in Landscape Design, Master of Science in Engineering and in Architecture, Master of Science (in Pharmacy), Master of Science in Public Health, Civil Engineer, Mechanical Engineer, Electrical Engineer, Chemical Engineer, Marine Engineer and Naval Architect, Doctor of Philosophy, Doctor of Science, and Doctor of Public Health.

Students in any School or College of the University may enter the classes in any other School or College, upon obtaining permission from the two faculties.

THE UNIVERSITY SENATE

The University Senate is a body composed of the President of the University, the Professors, Associate Professors, Assistant Professors, and Acting Professors of all Schools and Colleges, and the Librarian. The University Senate is authorized to consider any subject pertaining to the interests of the University, and to make recommendations to the Regents in regard thereto.

The Senate Council consists of the President of the University, the Deans of the several Schools and Colleges, the Chairman of the Committee on Student Affairs, and members elected by the several faculties as follows: from the College of Literature, Science, and the Arts, two; and from the Colleges of Engineering and Architecture, the Medical School, the Law School, the College of Pharmacy, the Homœopathic Medical School and the College of Dental Surgery, one each.

The functions of the Senate Council are as follows:

1. To consider matters appertaining to the general welfare of the University and report upon the same to the University Senate.

2. To communicate to the Regents through the President the action of the Senate.

3. To act for the Senate during vacation periods.

4. To adopt rules and regulations for the transaction of its business and to elect a secretary from its members who is empowered to call meetings at the direction of the President, at the request of two Deans, or three members of the Council, or upon the written request of five members of the University Senate.

5. To call upon members of the University Senate for such service, information, and assistance as may be desirable.

THE LIBRARIES

The Libraries of the University are the General Library, the Engineering Library, the Medical Library, the Law Library, the Homœopathic Library, the Dental Library, and the Chemical Library. They contained in the aggregate, June 30, 1916, 368,238 volumes. One thousand seven hundred ten periodicals are regularly received.

THE GENERAL LIBRARY contains 283,027 volumes and 4,580 maps. It includes the following special collections: Parsons Library (political economy), 6,076 volumes; McMillan Shakespeare Library, 6,525 volumes; Goethe Library, 1,131 volumes. The Hagerman Collection and the Dorsch Library, formerly treated as special collections, have, with the approval of the donors been merged in the general collection. One thousand thirty-three periodicals are taken by the General Library.

Within the last few years the library has been enriched by several large and valuable gifts. Among the more important of these that deserve special mention are the historical books, including the Stevens Facsimiles, presented by Mr. Clarence M. Burton, of Detroit; the Morris Philosophical Library, presented by Mrs. George S. Morris; the Alpheus Felch Historical Library, bequeathed by the late Governor Alpheus Felch; the Walter Library of Romance Literature, bequeathed by the late Professor Edward L. Walter; the Stearns Musical Collection, presented by Messrs. Frederick and Frederick K. Stearns, of Detroit; the Germanic Library of the late Professor George A. Hench, presented by his mother, Mrs. Rebecca A. Hench; the Geological Library of the late Professor Israel C. Russell, presented by his widow; and the major portion of the libraries of Richard Hudson, former Professor of History, of Elisha Jones, formerly Professor of Greek, and of the late Mr. T. S. Jerome, of Capri, Italy.

The library is one of the depositories for the printed catalogue cards issued by the Library of Congress; it has acquired those printed by the John Crerar Library, of Chicago; it subscribes, also, to the card publications of the American Library Association, Harvard University, and the Royal Library, Berlin. The bulk of the

University's book possessions are now recorded in a public catalogue based largely on these various series of printed cards.

Books may be drawn by all officers and students of the University, and by others having special permission. The reading room for general use will seat 270 readers. Separate rooms are provided for advanced students where work is pursued with the necessary books at hand. A new library building was authorized at the last session of the Legislature. The work of erection is already begun, and should be completed in 1918.

The library is open for consultation fourteen hours daily, except during the summer vacation after the close of the summer session, when it is open ten hours daily. During the regular academic year the library is open on Sundays, for reference use, from 2 to 5:30 P. M. On important legal holidays the library is closed.

The income of the FORD-MESSER BEQUEST of $20,000, of the COYL BEQUEST of $10,000, and of the OCTAVIA WILLIAMS BATES BEQUEST of over $17,000, is used for the increase of the General Library.

THE NATURAL SCIENCE LIBRARY, containing 12,897 volumes, is housed in a specially designed room in the Natural Science building. It is in charge of an assistant detailed from the General Library. It covers the modern books and periodicals in Psychology, Mineralogy, Geology, Zoology, Botany, and Forestry.

THE CHEMICAL LIBRARY, containing 8,396 volumes, occupies a special room in the Chemistry and Pharmacy building and is in charge of an assistant detailed from the General Library. One hundred eleven periodicals are currently received.

THE ENGINEERING LIBRARY, containing 12,323 volumes, occupies a special room in the Engineering building and is in charge of an assistant detailed from the General Library. The Architectural Library, containing 2,073 volumes, is housed in the Engineering Library. In addition, about three thousand books on Engineering and Architecture are shelved with the collections of the General Library. One hundred forty-eight engineering and architectural periodicals are received.

THE MEDICAL LIBRARY, containing 27,404 volumes and 500 pamphlets, is shelved with the General Library, and is consulted under the same regulations. Three hundred fifty-six periodicals are regularly received.

THE LAW LIBRARY, containing 36,307 volumes, occupies the large room on the second floor of the Law building. Thirty periodicals are taken.

THE LIBRARY OF THE HOMOEOPATHIC MEDICAL SCHOOL is shelved with the General Library, and is subject to the same regulations. It contains 4,140 volumes. Twenty-nine periodicals are regularly received.

THE LIBRARY OF THE COLLEGE OF DENTAL SURGERY* is shelved in a room in the Dental building. It contains numerous sets of valuable periodicals and the most important treatises on the theory and practice of dentistry. The whole number of volumes is 2,966. The library has recently been enriched by the private collection of the late Dr. W. D. Miller, consisting of about three hundred volumes. Six dental periodicals are taken.

THE ASTRONOMICAL OBSERVATORY

The University Observatory was founded in 1852, through the liberality of citizens of Detroit, and on this account it was named Detroit Observatory. It is situated on the northeastern border of the city of Ann Arbor, about half a mile from the University, on a site overlooking the valley of the Huron River. The Observatory grounds until recently limited to four acres, have now been increased to thirty acres.

In the beginning the principal instruments of the Observatory were a refracting telescope of 12¼ inches aperture, constructed by Henry Fitz, of New York; a meridian circle of six inches aperture by Pistor & Martins, of Berlin, the gift of Henry N. Walker, of Detroit; a sidereal clock by Tiede; a chronograph by Bond; and a four-inch comet-seeker.

About 1880, to increase the facilities for instruction, a six-inch refracting telescope, equatorially mounted, with objective by Alvan Clark & Sons, and a three-inch transit instrument, with zenith telescope attachment, were obtained, both made by Fauth & Company, of Washington. Since then to the same end other instruments have been obtained, notably the following: a mean time clock by Howard, chronometers by Bond and by Negus, chronograph by Saegmuller, altazimuth instrument by Wurdemann, theodolites by Brandis, sextants, transit, computing machines, etc. The 12¼-inch refractor was reconstructed by the Observatory Shop in 1907 and a new filar micrometer fitted to it, made by the Warner & Swasey Company, of Cleveland. A new driving clock has been made for the six-inch refractor and a camera has been attached to this instrument for making astronomical photographs. This camera has a Tessar lens of 4.5 inches aperture. A new comet seeker of 4.5 inches aperture has also been constructed.

Facilities for modern astrophysical research have been provided by installing a large reflecting telescope, of 37½ inches aperture.

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* Named the Taft Library in honor of the late Professor Jonathan Taft, by action of the Board of Regents in July, 1904.

This instrument was designed at the Observatory and built by the Observatory Shop. The optical parts were made by the John A. Brashear Company, of Allegheny. It is equatorially mounted and has flat and hyperbolic secondaries, so that it can be used either as a Newtonian or as a Cassegrain reflector. Since its completion, in 1911, it has been used by officers of the Observatory and by graduate students almost exclusively for stellar spectrographic research. It is supplied with a single-prism spectrograph of the most efficient modern construction, designed especially for radial velocity determinations. The Observatory has two engines designed particularly for the measurement of spectrograms; also a large comparator, which may be used for this purpose, and likewise for the measurement of rectangular coordinates of stellar photographs; and a Hartmann microphotometer by Toepfer, having attachments enabling it to be used as a measuring engine.

A refracting telescope of twenty-four inches aperture, the gift of Mr. R. P. Lamont, of Chicago, has been designed at the Observatory and is being constructed by the Observatory Shop. This instrument is in an advanced stage of construction. Its completion has been delayed owing to the difficulties which the glass makers have experienced in producing the disks of glass required for the objective.

The Observatory has recently received, as a gift from Justice J. E. Howell, of Newark, New Jersey, a portable telescope of 4.6 inches aperture, made by Benj. Pike's Sons, of New York.

A set of seismographs for the registration of vibrations due to earthquakes has been continuously in operation since 1909. This set includes two Bosch-Omori horizontal pendulums, each with a steady mass of 220 pounds; a Wiechert seismograph, also with a steady mass of 220 pounds, and registering two horizontal components; and a Wiechert vertical seismograph.

A shop supplied with excellent machine and hand tools is maintained at the Observatory. It has been an important factor in developing the resources of the Observatory, by the construction of new instruments and the modification of old ones, to meet the requirements of instruction and research.

The larger instruments are intended for research, and when not otherwise employed will be available to that end to such students as have the technical ability to use them to advantage.

For many years the Observatory has been receiving the principal astronomical publications, and its technical library is reasonably complete, including in round numbers about 2,800 volumes. These include nearly all the printed star catalogues, most of the modern publications of observatories and astronomical societies, and nearly complete files of the astronomical periodicals.

THE MUSEUMS

The University Museums contain collections in zoology, anthropology, geology, mineralogy, botany, materia medica, chemistry, anatomy, the industrial arts, and the fine arts. These are deposited in the various buildings devoted to the subjects they illustrate, except the zoological and anthropological collections, which are housed in a separate building—the Museum of Zoology. All of these are accessible both to students and to visitors. The University affords a secure depository for objects of value, and it is hoped that frequent gifts will be made to its several collections.

THE MUSEUM OF ZOOLOGY

The collection in the Museum of Zoology may be described as follows:

I. THE ZOOLOGICAL COLLECTIONS.—These are large and valuable.

They include a series of animals from Western United States made by Lieutenant Trowbridge, a large number of specimens from South America and the Philippines collected by Dr. Joseph B. Steere, a considerable amount of material obtained by the Museum expeditions to various parts of the United States, South America, and Central America, and the extensive collections of the Michigan Geological and Biological Survey. A special effort is made to accumulate zoological specimens from all parts of the State in sufficient quantity to permit of detailed scientific study, and to obtain the foreign forms needed in comparative work. All of the collections are available for study, the specimens being catalogued and systematically arranged, and the mammals, birds, reptiles, amphibians, and insects have also been systematically catalogued. As far as circumstances will permit, capable persons are given every opportunity to study the collections.

The Mammal Collection contains a valuable series of skins and osteological preparations in addition to the specimens on exhibition. There are about 1,000 specimens in this department, most of which are from Michigan, but foreign types are being acquired as rapidly as possible.

The Bird Collection includes about 8,000 skins and 1,600 mounted specimens. There are large series from Michigan, representing the variations with age and sex in many species, but there are also many specimens from various parts of the new and old worlds. The collection of bird stomachs numbers 2,500 entries. A series of groups illustrating biological facts has been installed. In these groups the natural surroundings are reproduced in detail. There are forty-three types, eight paratypes and two cotypes, representing forty-four species in the collection.

The Reptile and Amphibian Collection contains a large series of Michigan specimens, the variety and number of specimens making it the most valuable collection of its kind in the State. In addition to the Michigan material there are several thousand specimens from various parts of North, Middle, and South America and a rapidly growing series of Old World forms. There are many types in the collection.

The Fish Collection is composed almost entirely of Michigan forms. There are about 2,000 specimens, most of which were collected by the various surveys and which are thus accompanied by ecological data.

The Mollusk Collection includes shells of about 6,000 species, representing most of the genera of the land, fresh-water, and marine shells. The specimens have for the most part been identified by experts which makes the collection of special value to the student.

The Insect Collection at present contains several thousand determined species, representing about 150 families, which are systematically arranged and catalogued. The collection is particularly strong in Michigan material, and much of this has been collected by the several Museum and State surveys and is accompanied by ecological data. The material is from nearly every state in the Union, and Europe, Africa, South and Middle America, and the South Pacific Islands. There is a particularly good series, principally economic forms, from the Philippines (the Ledyard Collection). There are many types in the collection.

Miscellaneous Invertebrates.—The collections of invertebrates other than insects and mollusks consist largely of miscellaneous material for illustrative purposes. The only extensive series is of Crustacea, which comprise a determined collection of American forms. There are types and paratypes of several species of Crustaceans.

II. THE ANTHROPOLOGICAL COLLECTIONS.—Among the most notable features of this department of the Museum are:—

a. *The Oriental Section,* including the entire Chinese Collection, mentioned below, weapons, clothing, farm implements, carpenters' tools, porcelains, and idols, from China, Formosa, and the Philippines, secured by the Beal-Steere Expedition, and an interesting series of South Sea Islands weapons, presented by the Smithsonian Institution.

In 1885 the Chinese government presented to the University the exhibit which it sent to the New Orleans Exposition. A part of the collection, numbering several thousand specimens, is on exhibition in the museum building. It illustrates with special fullness the varieties of Chinese cotton, the Chinese processes of manufacturing cotton and the finished products of cotton and silk. There are many articles showing the skill of the Chinese in working in wood, ivory, and porcelain, in embroidery, and in painting on glass and on silk.

b. *The Collection of Peruvian and New Mexican Ceramics,* including an exceptionally fine series of ancient Peruvian burial pottery and modern basins secured by the Beal-Steere Expedition, and an extensive series of New Mexican pottery received from the Smithsonian Institution.

c. *The Modern Indian Section,* including wearing apparel, implements of war and the chase, and household utensils, of the South American, North American, and the Alaskan Indians, and a fine example of the Alaskan totemic column.

d. *The Stone Age Section,* including the local collection of the late David De Pue, a series of Danish implements, and a series of casts of rare implements prepared by the Smithsonian Institution.

SPECIAL COLLECTIONS AND MUSEUMS

MINERALOGICAL AND PETROGRAPHICAL COLLECTIONS. — The mineral collections comprise more than 40,000 specimens. For instructional purposes several large collections have been arranged. These are (1) large display and study collections, (2) an unlabeled collection for use in determinative mineralogy, (3) a lecture collection of about 2,500 specimens, and (4) the blowpipe collection. The minerals of Michigan, especially those of the Lake Superior mining region, are well represented by large suites.

The petrographical collections contain several thousand specimens, and consist of (1) systematic labeled collections for lecture and study purposes. Many of the specimens of this collection were brought together by the older State Geological Surveys. This collection is accompanied by a large number of thin sections. (2) There are also good collections of unlabeled specimens for determinative purposes.

The University has from time to time come into the possession of various private mineral collections, of which the Lederer, Rominger, Garringer, and Collier collections may be mentioned.

GEOLOGICAL AND PALEONTOLOGICAL COLLECTIONS.—The Paleontological collections are, in large part, in the Geological Museum in the Natural Science building. The invertebrate collections consist of several thousand carefully identified specimens illustrating the extinct forms of life. The specimens are arranged to illustrate the zoological and botanical characters of extinct life forms, the stratigraphical sequence of fossils, the relation between living and extinct forms, and certain definite lines of evolution. Models of extinct forms accompany the fossils to show the appearance of the animals in life. The paleontology laboratory contains numerous collections from different localities, affording opportunity for the student to become acquainted with the fossils of definite geological horizons. Among the more important units in the collections are the collections of the Michigan Geological Survey, the Rominger collection of corals, the White collection, and the Springer collection of crinoids.

The vertebrate fossils are in part placed with the invertebrates in the Geological Museum, but some of the larger mounted specimens are placed in the Museum building. These specimens, with appropriate models and photographs, serve to illustrate the development of vertebrate life.

The Geological collections illustrating the structure and character of rocks will be installed in cases in the corridor of the second floor of the Natural Science building.

The collections of PHARMACOGNOSY and INDUSTRIAL CHEMISTRY occupy a floor space of 2,500 square feet in the Chemistry and Pharmacy building, and are briefly described as follows:

THE PHARMACOGNOSY COLLECTION comprises several thousand mounted and labeled specimens of products from all parts of the world, such as are used for medicinal, alimentary, and industrial purposes. The articles are of vegetable and of animal origin and are arranged in the present system of scientific classification. Water-color plates and photographs, showing the form and habit of the plant, accompany the crude drugs and their products. Series of chemical constituents, isolated by students, and mounted in part in the relative proportions in which they exist in the plant, make up a phytochemical exhibit of composition. There is a set of drawings and wall-charts of the histological structure of drugs, foods, and condiments, for aid in the study of adulteration, together with photomicrographs of longitudinal and transverse sections.

The cultivation and preparation for the market and the commerce of these articles among the peoples of the earth are illustrated by collections of authentic photographs, many of which have been expressly procured for the study of commerce with distant parts of the world.

CHEMICAL INDUSTRY.—This collection contains exhibits illustrating the raw materials, intermediate products, and final products of those manufacturing industries whose operations are chemical in nature. Among the industries represented are those which produce salts of various types, acids, alkalies and bleaching powder; pottery, glass, and Portland cement; electric furnace products; copper, steel, and other metals and alloys; the by-products from coal distillation, with explosives and dyes as finished products; petroleum; fats and oils, soap, and glycerine; paint and varnish; leather and glue; rubber; sugar, starch, and glucose; textiles and paper.

THE MUSEUM OF ANATOMY AND MATERIA MEDICA and the DENTAL MUSEUM are housed in the buildings of the Medical School and the Dental College, respectively, and are described in the chapters devoted to them.

MUSEUM OF THE FINE ARTS AND HISTORY

The works of art belonging to the University have been removed from the galleries formerly occupied by them in the Library building and have been installed in the Alumni Memorial Hall. A printed catalogue, prepared by Professor Martin L. DOoge, contains fuller descriptions than can here be given. The collection was begun in 1855. It contains a gallery of casts, in full size and in reduction, of some of the most valuable ancient statues and busts, such as the Hermes, the Apollo Belvidere, the Laocoon, the Wrestlers, and the Sophocles; more than two hundred reductions and models in terra cotta and other materials: the statue of Nydia by Randolph Rogers; casts of modern statues, busts, etc., and reliefs; a number of engravings and photographic views, illustrating especially the architectural and sculptural remains of Ancient Italy and Greece; a small collection of engraved copies of the great masterpieces of modern painting; two series of historical medallions—the HORACE WHITE COLLECTION, presented by Honorable Andrew D. White, and the GOVERNOR BAGLEY COLLECTION—the former illustrative of ancient, mediæval, and modern European history, the latter designed to embrace the commemorative medals struck by order of Congress or other authorities, and now containing one hundred such medals; and a large collection of coins, chiefly Greek and Roman, presented to the University by the late Dr. Abraham E. Richards.

THE ROGERS GALLERY comprises the entire collection of the original casts of the work of the late Randolph Rogers, more than a hundred in number. It was given by that distinguished sculptor to the State of Michigan for the University museum.

THE LEWIS GALLERY, bequeathed to the University by the late Henry C. Lewis, of Coldwater, comprises about four hundred and fifty paintings and forty pieces of statuary.

Through the generosity of Mr. Henry P. Glover, of Ypsilanti, the University has recently acquired possession of the valuable De Criscio collection of Latin inscriptions, about 250 in number, ranging in age from the reign of Augustus to the 5th century, A. D. The most of the inscriptions are on slabs of marble.

The late J. Q. Adams Fritchey, A.M., of St. Louis, Mo., a graduate of the class of 1858, bequeathed to the University a collection of modern coins, medals, and medallions, numbering about one thousand, issued prior to 1876, and possessing historic value and interest to numismatists.

Dr. Henry Smith Jewett, A.B., (1868), of Dayton, Ohio, has recently presented to the University a complete set of the various issues of fractional currency put out by the United States government during the Civil War and Reconstruction periods. Accompanying this collection is a nearly complete set of the "documentary" stamps issued by the government during the Civil War.

A small but valuable collection of Egyptian antiquities has recently been presented by A. M. Todd, Esq., of Kalamazoo, Mich.

MUSEUM OF MUSICAL INSTRUMENTS

The Stearns Collection of Musical Instruments, donated by the late Frederick Stearns, A.M., of Detroit, is considered by authoritative critics, both in this country and abroad, one of the most significant of modern collections. It contains about 1,400 examples of every type of musical instrument, and its value for purposes of independent study and original research is heightened by the fact that the scientific aspects of *Instrumentenkunde* have been emphasized rather than mere beauty of form or historic interest. Still these features have not been ignored, as will be observed by a study of the instruments, notably those from India and Japan, while many of the instruments are rich in historical significance. The educational aspects of the collection are emphasized by the fact that Mr. Stearns presented to the General Library a very inclusive collection of books bearing on the subject. This feature will be emphasized still more in the near future, when a complete card catalogue of all references to instruments contained in the General Library will be at the command of students. The collection has recently been transferred to an appropriate room in the Hill Auditorium. Although not formally included in this collection, the Frieze Memorial (Columbian) Organ may be considered as belonging to it, as it is a fine example of organ building in this country at the time of its erection. It was rebuilt and enlarged at the time of its transfer from University Hall to its present location.

THE LABORATORIES

In the several laboratories of the University opportunities are provided for practical instruction in physics, chemistry, mineralogy, geology, zoology, psychology, botany, forestry, actuarial work, engineering, histology, physiology, hygiene, electrotherapeutics, pathology, anatomy, and dentistry.

The laboratories designed primarily for students of engineering, of medicine, and of dentistry are described in later chapters.

PHYSICAL LABORATORY

The first floor of the Physics building is devoted to experimental work in heat, electricity and magnetism, and to research. It contains about 8,000 square feet and is divided into fourteen rooms, including a battery room, a large laboratory for advanced work in heat, another large room for electrical measurements, and a smaller one for photometry. Two rooms are used for elementary instruction in direct and alternating current machinery and are equipped with various types of machines in common use, with the necessary instruments for testing. The rest of the rooms on this floor are used for research.

The battery room contains two storage batteries; one consisting of one hundred and twenty cells, of ten ampere capacity, and one, consisting of eighteen cells, of twenty-five ampere capacity. A switchboard, wired to all parts of the building, serves for the distribution of current from the batteries as well as the 220 and 110 volt direct current from the University power house and the 110 volt alternating current from the city lines. Compressed air is also available in several rooms.

On the second floor are two lecture rooms, one seating one hundred twenty and the other four hundred students. An apparatus room is adjacent to each lecture room. This floor contains in addition a large laboratory for beginners, the library, an office, and three research rooms.

The third floor contains eleven rooms, the two largest of which are used as laboratories for beginners. Two rooms are used as class rooms and the rest for the advanced work in sound, light, and electrochemistry.

The laboratory is well supplied with apparatus from the best European and American makers. The list includes accurate standards for all kinds of physical measurements, a dividing engine, chronograph, and a large number of chemical balances, tuning forks, and resonators, from Koenig. In light, it includes seven spectrometers, two Abbé-Pulfrich interferometers, a Michelson interferometer, a polariscope from Schmidt and Hænsch; in heat and electricity, pyrometers, a Callendar bridge, a thermogalvanometer, three poteniometers, several pieces of apparatus for magnetic testing, a Siemens and Halske oscillograph, and many other standard instruments.

The annual budget allows the addition each year of apparatus needed for the work of graduate students and for illustration of recent advances in physics.

CHEMICAL LABORATORY

The Chemistry and Pharmacy building is a modern fire-proof four-story building erected in 1909. It is provided with an efficient ventilation system and its rooms are all well-lighted. The total floor area of 104,500 square feet includes 127 rooms, comprising adequate class and lecture rooms, a capacious library and reading room, centrally located dispensing and store rooms with facilities for dispensing on the main floors, and ample laboratory accommodations. The supply of routine materials and apparatus is extensive, as is also the special equipment for research. Facilities for investigations in the various branches of chemistry and pharmacy are provided in numerous well-equipped smaller laboratories interspersed amidst the offices and private laboratories of the teaching staff. The library is in charge of a University librarian, and is a part of the regular University Library system. It houses the chemical library and is especially rich in its files of journals, there being full sets of all the important chemical journals, many of which are comparatively rare. All classes in chemistry and pharmacy, excepting physiological chemistry in the Medical Schools, are taught in this building.

NATURAL SCIENCE BUILDING

A four-story fireproof building was erected in 1915 for the use of the departments of botany, forestry, geology, mineralogy, psychology, and zoology.

The main part of the building is a reinforced concrete skeleton frame with reinforced concrete and terra cotta tile floor construction. The outside walls are finished with cut stone and brick and the window sash is of steel.

On account of its location between the diagonal walk on the one side and North University Avenue on the other, the building is of irregular shape. The approximate measurements are for the north side 243 feet, for the east side 263 feet, for the west side 150 feet; and the south side, with a series of breaks, is made to conform in general to the diagonal walk and trees. A green house is located on the south side at the east corner. The building encloses a court 120 feet across. A corridor about 700 feet in length runs through the center of each floor. There is a clear span of approximately 23 feet between the corridor and the exterior walls on both the campus and court sides. The form of construction gives unusually large windows, and these combined with the light court in the center allow excellent illumination of all rooms. The corridor floors are finished with terrazzo, the floors of the rooms with cement. The building contains 270 rooms. The basement under the first floor contains an extensive tunnel in which is centered the plumbing, steamfitting, and electric work; rooms for the air supply fans; machine rooms for the two freight elevators; and caves for the use of the various departments. Each department is given a section from roof to basement. At the southwest corner on the diagonal walk is located a lecture room seating 500, with a preparation room attached. The lecture table is built in sections; each section runs on rollers and can be taken to any part of the building for the preparation of material. These sections fasten to stanchions set in the cement floor; at the stanchions all sorts of plumbing and electric supplies are available, including low-voltage storage battery current. An isolated and well lighted library for all departments in the building is located above the lecture room. This portion of the building is carried on structural steel.

The building is equipped with a unit system of waste pipes, water, gas, and compressed air, which will enable any change in plumbing to be made at small cost at any time in the future. All piping is exposed. There is a vacuum cleaning system throughout. Alternating current is used for power and for lighting and is available everywhere. There is a unit system of distribution of direct current at 220 volts and special outlets for direct current at 75 volts are well distributed. Cistern water and filtered water are available at certain places in the building. The building is well ventilated with a complete air supply and exhaust system. A special separate exhaust is provided for the toilets and certain other rooms. Pneumatic switches and diaphragm motors are used to control ventilation. The temperature is controlled by thermostats.

MINERALOGICAL LABORATORY

The mineralogical laboratory comprises 36 rooms located in the northeast portion of the Natural Science building. A suite of five rooms, designed especially for research, are located on the first floor. Three of these rooms have light-tight shutters, and are provided with piers equipped with water, gas, compressed air, and alternating and direct currents. The packing, store, and grinding rooms are also on this floor. The mineral collections, lecture room, model and apparatus rooms, and an office are on the second floor. The laboratories for the courses in general mineralogy, blowpipe methods, and mineral and rock analyses, several offices, and a stock room are on the third floor. On the fourth floor are the laboratories for lithology, petrography, crystal measurements, and physical crystallography, a small lecture room, and offices for the staff and advanced students. A crystallization room is located in the sub-basement.

The laboratory is well equipped with crystal models, natural crystals, and lecture and working collections of minerals, rocks, and thin sections. There is an excellent equipment of goniometers, polarization microscopes, and other crystallographic-optical instruments necessary for the thorough study of minerals. These instruments are all of the most modern and approved types. The blowpipe and chemical laboratories possess every facility for the qualitative and quantitative determination of minerals and rocks. The equipment of the laboratory is such that special attention can be given to graduate work, and special investigations in mineralogy and petrography.

GEOLOGICAL AND GEOGRAPHICAL LABORATORY

The department of Geology and Geography is located in the new Natural Science building. Special laboratories have been provided for the work in general geology, historical geology and paleontology, physiography and other lines of geographic instruction, and economic and soil geology. In addition there have been provided special research laboratories, a map and folio room, the Russell seminary room, photographic dark rooms, and a common departmental library for works treating especially of the natural sciences. The geological collections are arranged in a museum room immediately adjoining the paleontological laboratory. Modern lecture and class rooms and a large auditorium for the common use of the several natural science departments supply all necessary facilities for lecture and class instruction. Meteorological instruments will be conveniently located on the roof of the building, but the instruments for the study of earthquakes are retained in the observatory.

The collections of economic rocks and minerals which are made use of in connection with the courses in Economic Geology, have been considerably augmented during the past few years through purchase and exchange, so that the occurrence and the associations of the various ores and minerals of economic importance can be well illustrated.

BOTANICAL LABORATORY

The botanical laboratory occupies the southern portion of the new Natural Science building. Not only is the space much greater than that formerly used by the botanical department, but the equipment is much more varied, and the possibilities of instruction and research correspondingly amplified. The installation includes a variety of laboratories and apparatus composing an equipment competent to deal with many of the problems of modern biology. Besides the usual provision for morphological work, there are provided means of working with vacuum and pressure; refrigeration rooms, in which constant temperatures from zero degrees upward may be employed; a greenhouse of 1,400 square feet attached to the main building and divided into several rooms for securing differences of moisture, temperature and illumination; a larger greenhouse with laboratory and garden, especially for research, located a mile from the laboratory; photographic rooms; equipment for chemical biology and for mycology and plant pathology.

The department also has a cryptogamic herbarium, a phanerogamic herbarium, and a museum. The University owns various tracts of land within and on the borders of the city of Ann Arbor which contain meadows, a bog, a small lake, ponds, and a woodlot. These are all used by the botanical department for field work and ecology.

BOTANICAL GARDEN ARBORETUM

Through the gifts of friends and an agreement with the City of Ann Arbor, the University has come into possession of a parcel of land containing about ninety acres. The city coöperates with the University in developing this tract as a park and botanical garden arboretum.

The land is within the eastern boundary of the city of Ann Arbor and fifteen minutes' walk from the campus. It has a frontage of more than three-quarters of a mile on the Huron River and includes the well-known School Girls' Glen. The topography is exceedingly varied, the highest point being 185 feet above the river. The soils vary from heavy clay to light sands.

About fifteen acres of hillside and ravine are already covered with native trees, shrubs, and herbaceous plants.

A tentative plan worked out by Mr. O. C. Simonds, landscape architect of Chicago, and further developed by Professor Tealdi of the department of Landscape Design at the University, contemplates three distinct features: The beauty of the tract as a public park; a collection of native plants, shrubs, trees, particularly those of the Michigan flora; and collections of decorative shrubs, trees, and perennials employed in landscape designs to be represented here for inspection and study by the students of Landscape Design.

NEW BOTANICAL GARDEN

In 1913 the University acquired 20 acres of land on the southwest side of Packard Street just beyond the city limits. This is a tract of level, fertile land with excellent moisture conditions, and is much more accessible for students during the winter months than is the Arboretum. The interurban cars pass by the tract and the city cars run within 40 rods.

The Botanical Garden offers excellent opportunities for all phases of botanical instruction and research concerned with growing plants. Its physical equipment includes at present four greenhouses, with a combined area of 7,850 square feet, ample work rooms, a boiler house with modern equipment, and a two-story brick laboratory, with steam heat, electric lighting, and a system of water works. An important feature of the greenhouses is the provision of five separate rooms for individual research, each with independent ventilation and automatic heat control. Ample space is provided on the grounds for the propagation and cultivation of plants for experimental purposes.

The collection of growing plants is now being developed, and contains about seven hundred species, including the more important economic and ornamental species of the tropics and a small but representative collection of hardy plants. The Botanical Garden provides for the decoration of University buildings and for annual floral displays.

ZOOLOGICAL LABORATORY

The zoological laboratory, with a floor space of about 26,000 square feet, occupies the northwest quarter of the Natural Science building and contains 70 rooms. On the first floor are the laboratories of general physiology and ecology, a students' dark room, a small chemical laboratory, refrigerating room, unpacking room, preparation room, and store rooms. The second floor is used chiefly for laboratories for classes in beginning zoology, offices, and seminary rooms; the third for laboratories, lecture room, museum, and study room for advanced classes, while the fourth floor is devoted largely to private laboratories and offices for the staff and graduate students. There is an aquarium room on each floor provided with city water, filtered water, cistern water, and compressed air. That on the first floor contains, in addition to many small aquaria, a small fish hatchery and concrete floor tanks for keeping aquatic animals. In the sub-basement is a cave fitted with aquaria. On the upper floor are two small vivaria. There are rooms especially fitted for experimental work requiring temperature control and for light reaction work. A suite of five rooms on the upper floor is devoted to photography. Here are a well lighted photographic gallery, a dark room, and special rooms for photomicrography, enlarging and reducing on both plates and paper, and photographic storage.

There is a good equipment of microscopes, of microtomes, of Zeiss's photographic apparatus, and of other accessories. For illustrative purposes, there is a collection of alcoholic specimens (many of them from the Naples Zoological Station), and a full collection of Lueckart, Nitsche's, and other wall charts. For field work there are provided collecting apparatus and field glasses for the individual use of students and photographic cameras, a boat, and larger pieces of collecting apparatus for collective use.

PSYCHOLOGICAL LABORATORY

The psychological laboratory occupies a portion of the new Natural Science building. The available space is cut into 40 rooms. On the first floor are located a class room, a shop, a research room with light-tight shutters and containing a concrete pier set in a bed of sand, a small storage room, rooms for keeping animals, and a room especially designed for work with the maze and for other work in comparative psychology. The second floor has offices and private laboratories for the staff, a phonetics room, dark rooms, and rooms with light-tight shutters and light walls for work in comparative psychology. Nine rooms, including a dark room, olfactory room with exhaust hood, chronometric rooms, etc., for use by the general experimental class are on the third floor. On the fourth floor are a sound-proof room, other connected rooms for acoustics, a series of research rooms, and a system of dark rooms in which a clear space over sixty feet in darkness may be obtained. These dark rooms may be used in various combinations and have an optics room with neutral gray walls in connection. The optics room and dark rooms have north windows as well as skylights, all of which are equipped with light-tight shutters.

All rooms are wired so that they can be interconnected through a central switch-board system and also supplied with low-voltage currents from dynamotors and storage batteries. Tubes in the walls and in the floor slab make possible other connections between several rooms. All parts of the laboratory are well supplied with alternating and direct currents, waste, gas, and compressed air.

Lectures to large classes are given in the main lecture room of the building. The laboratory is located adjacent to the library in which practically all psychological journals are on file.

Facilities for the study of other sides of animal behavior are provided in neighboring rooms belonging to the zoological laboratory.

The equipment includes a complete set of apparatus for the work of elementary experimental classes, models of the brain and sense organs, Hipp chronoscopes, kymographs, a large pendulum and gravity chronograph to regulate the registration apparatus, Meumann's time sense apparatus, a Marble mixer, a Musil rotator, a practically complete set of Herings instruments for color determinations, apparatus for testing the accuracy of indirect vision, a Müller cylinder episkotister, a Dodge tachistoscope, Dodge photographic apparatus, a Marbe sound recording apparatus, a complete set of Verdin's instruments for investigating speech, forks by Koenig and Edelmann, a modified Wien apparatus by Kohl for determination of sound intensities, Stern tonvariators, a modified Wirth memory instrument, and a considerable number of instruments devised in this laboratory and made in the University instrument shops. The equipment for work in sound and phonetics, for comparative psychology, for studying the learning processes, and for investigating the relations between physiological processes and mental states is particularly large; but every field is represented.

Such apparatus as is needed for advanced work or research will be procured as required. Every facility and encouragement is offered to students of sufficient preliminary training to undertake investigation on special problems.

FOREST LABORATORY

In the forest laboratory students receive instruction in forest botany, timber physics, structure of woods, and certain features of wood technology, as well as in forest measurements and the methods of study of the growth of timber. A good collection of wood specimens, sections of trees, and herbarium material is provided and will be increased as rapidly as possible. There is an ample supply of microscopes, compasses, calipers, height measures, and other apparatus for use in the laboratory and in the field.

A special nursery for the propagation of forest trees within ten minutes walk of the campus has been developed. This nursery is equipped to demonstrate certain phases of silvicultural work and the methods of commercial nursery practice from the preparation of the seed beds to the packing for shipment of the mature seedling. Quarters are provided on the grounds for the proper accommodation of students working in the nursery and for the detailed study of nursery work and investigation.

SAGINAW FOREST FARM

Special facilities for the study of forestry are supplied by the Saginaw Forest Farm, a tract of land about one mile west of the city of Ann Arbor, presented to the University by the Honorable Arthur Hill, of Saginaw. The farm, comprising eighty acres, is a typical example of the low hilly land of the drift district, and contains as great a variety of topographical and soil conditions as could be expected in an area of this extent. Its soils vary from heavy clay to sandy gravel. In addition to its other good features, there is a lake of clear water, from ten to fifty feet deep and covering an area of twelve acres.

The farm is to serve as an object lesson in forestry. Upon it provision is to be made for (1) an arboretum of all useful forest trees that can grow in Michigan; (2) model plantations of forest trees, and (3) special experiments in forestry, relating to various methods of propagating different kinds of timber, to the raising of particular forest products, and to other practical purposes.

THE EBER WHITE WOODS

The Eber White woods is a tract of native hardwoods located just outside the city limits of Ann Arbor and therefore within easy walking distance for students of the University. It contains about forty-three acres, varying from level to steep rolling ground, and has the usual variety of soil from sandy land to clay and gravel. It is well drained, with a small live brook flowing through one corner. The forest was cut over for local use many years ago, but a part of the old white and red oak timber is still standing. The plan is to keep this tract in the wild-woods condition, to illustrate the reproduction, growth, and development of our native timbers in the undisturbed forest.

The tract not only serves the department of Forestry, but is much used by classes in botany and zoology, besides being a favored recreation ground and park for the University students and the people of Ann Arbor.

STATISTICAL LABORATORY

This laboratory is equipped with various instruments to facilitate the computation and tabulation of statistics; among these may be mentioned one twenty-figure Millionaire arithmometer, one sixteen-figure Millionaire arithmometer, and one thirteen-figure Brunsviga arithmometer. Students are instructed in their use in the preparation and tabulation of premiums, reserves, and other schedules required in the practical work of insurance offices and statistical bureaus. The laboratory also contains a working library comprising complete sets of most of the important actuarial journals and text-books on actuarial theory. Reports on vital and other statistics are drawn from the general library when required.

LANTERN SLIDE SHOP

The lantern slide shop, situated in the basement of the Physiology building, has been extensively enlarged and remodelled. The dark-room is now fully equipped for printing and developing lantern slides, enlargements, and contact prints. Especial attention is given to glossy prints for reproduction. In the copy-room a new artificial lighting system has been installed, which gives a light photographically the same as daylight. It is thus possible to procure a true rendering of halftone under all weather conditions. A "Semper Focal" enlarging and reducing camera permits the making of lantern slides directly from the original negative regardless of its size.

The shop is under contract to give the University work precedence under all circumstances, but as the shop is now arranged, the out-put capacity is so much increased as to ensure prompt handling not only of large University orders, but also of a limited amount of outside work.

OTHER FACILITIES FOR INSTRUCTION

For descriptions of the various laboratories, shops, museums, etc., used in connection with the work in the professional schools and colleges, see the chapters on the several schools and colleges.

THE HOSPITALS

There are two hospitals connected with the University, affording ample facilities for clinical instruction. One of them is under the direction of the Faculty of the Medical School; the other is in charge of the Faculty of the Homœopathic Medical School. Further information in regard to the hospitals is given in the chapters on the medical schools.

AIDS TO MORAL AND RELIGIOUS CULTURE

The churches of the city of Ann Arbor are cordially thrown open to the students, whose interests are largely consulted by the pastors in their pulpit instruction and in their plans of work. There are churches of the following communions in the city: Baptist, Congregationalist, the Disciples, English Lutheran, German Lutheran, German Methodist, Methodist Episcopal, Presbyterian, Protestant Episcopal, Roman Catholic, and Unitarian.

The Students' Christian Association, comprising the University Young Men's Christian Association, and the University Young Women's Christian Association, is an organization of the campus which devotes itself to moral and religious culture. This is done through voluntary Bible and Mission study, religious education, religious meetings, social service and deputation work, personal attention, and cooperation with the churches and student Guilds.

The work for young men centers in Lane Hall, a fine structure two blocks from the campus. It has just been completed. The building is planned strictly for religious and restricted social purposes, leaving to the University gymnasium and the Michigan Union the physical and larger social features. On the basement floor are a social room, committee rooms, offices for the book exchange, and the caretaker's apartments. The main floor is devoted, with the exception of a large reading room, to administration, with offices for the secretaries, the employment bureau, the pastors of the local churches, and the denominational representatives at Ann Arbor. The third floor has a commodious auditorium, a dining room, and guest rooms. The men's organization has 1,200 members with a general secretary and the student cabinet at the head. The employment department last year gave out 3,512 jobs and assisted college men in earning $55,268.78.

The work for the college women is carried on in Newberry Hall, on State Street opposite the University campus. The general secretary and three assistant secretaries conduct the women's activities. The outstanding features are the weekly vesper services, the religious education classes and the social service work. The organization has 614 active members and 241 honorary members.

An organization known as the Federation of Christian Workers acts as a clearing house for all religious and social work among the young people of Ann Arbor.

Guilds and other societies, consisting chiefly of students, have been organized in several of the churches both for religious and moral culture and for social entertainment. The Hobart Guild, connected with St. Andrew's Church (Protestant Episcopal), has a commodious building, called Harris Hall, planned and equipped for the objects of the guild; and two of the several lectureships contemplated in its plans have been endowed,—The Baldwin Lectureship for the Establishment and Defense of Christian Truth, and the Charlotte Wood Slocum Lectureship on Christian Evidences. The work is under the immediate charge of a Curate.

The Tappan Presbyterian Association owns the buildings known as McMillan and Sackett Halls; it has a theological library of several thousand volumes, and one of its purposes is to maintain courses of lectures upon church history and church work. Its secretary, known as a Student Pastor, has his office in Sackett Hall. Its active work centers about the Christian Endeavor Society of the local Presbyterian Church.

The Methodist Episcopal Church has organized the Wesleyan Guild, and has a permanent fund for the support of the Henry M. Loud Lectureship. The work is in charge of a Permanent Secretary.

The hall of the Baptist Students' Guild (Tucker Memorial), opposite the First Baptist Church, is the center of work among Baptist students. The two upper floors have students' quarters, accommodating fifteen men, while the first floor, with its library, reading and music room, and office, is used for general social and religious purposes. The Guild also employs a Director who devotes his whole time to the student work.

The Young People's Religious Union is a society formed in the Unitarian Church with similar purposes.

The society organized in connection with the Church of the Disciples is called the Inland League.

All Catholic students are expected to become members of the Students' Catholic Club, which meets twice a month in St. Thomas Parish Hall. The society is under the personal supervision of the pastor of St. Thomas' Church. Its object is both social and religious. A fund is being collected with which to erect a Catholic Club building.

The Christian Science Society was formed in accordance with the Manual of the First Church of Christ, Scientist, in Boston, Mass. Faculty, students, and alumni of the University are invited to attend the meetings.

The Michigan Menorah Society is an organization, open to all members of the University, devoted to the study and advancement of Jewish culture and ideals. It attempts, formally through the regular university courses, and informally by means of special lectures, original papers, and free discussion, to stimulate an interest in, and spread a knowledge of the history, the literature, the religion, and the current problems of the Jewish people. It is affiliated with the Intercollegiate Menorah Association.

FACILITIES FOR PHYSICAL TRAINING

Gymnasiums. — The University has two gymnasiums, one for men and one for women, erected at a cost of about $125,000. The former is called the Waterman Gymnasium; the latter, the Barbour Gymnasium. In the conduct of the gymnasiums the aim is not so much the development of a few gymnastic experts as the provision of wholesome physical exercise for the many. The facilities of the buildings, including the physical examinations (which every locker holder must take) and instruction, are free to all students, the only charge being a rental of $2 a year for a locker for men students, $1 for women. A physical examination and a stated amount of gymnasium work in regular classes are required of students in the College of Literature, Science, and the Arts, and in the Colleges of Engineering and Architecture during their first year of residence at the University, and for second-year women. For other students gymnasium work, for the present, is voluntary.

PHYSICAL TRAINING FOR MEN

The Waterman Gymnasium. — The Waterman Gymnasium was named in honor of the late Joshua W. Waterman, of Detroit, who contributed largely to its cost. The main floor is a rectangle with truncated corners and dimensions of 246 by 90 feet, and is well equipped with the various kinds of apparatus usually found in the best modern gymnasiums. Several smaller rooms are devoted to administration, fencing, boxing, and other special purposes, while the basement is given up to baths and lockers. The main hall is lighted in the daytime through a large skylight 66 feet above the floor, and in the evening by electricity. A gallery makes room for an elliptical running track 528 feet in length.

Before beginning gymnasium work each student receives a thorough physical examination in order to eliminate those who are not physically capable of doing the regular class work. Every student examined is also measured and furnished with an anthropometric chart, which affords a comparison of his own measurements with those of the average student and reveals for correction any abnormality that may be present.

The compulsory work in Physical Training is planned to produce uniform development, which is of the greatest importance; special attention is given to arm and chest exercises, since the development of these parts of the body is below normal in a great majority of the men who come to college. In order to be interesting, however, the work is varied, and consists of athletic exercises, as well as gymnastic drills and apparatus work. Credit towards the requirement in physical training is given for outdoor sports in season, such as class football, soccer, ice hockey, and cross country running, provided that those who desire to engage in these sports make proper arrangements with the Director of the Gymnasium. After the close of the season for these sports, students participating in them must report for regular indoor work. An outdoor running track has been constructed adjacent to the gymnasium, in order to encourage outdoor running when weather conditions permit.

Freshmen in the College of Literature, Science, and the Arts and the Colleges of Engineering and Architecture are required to take one year of gymnasium work, consisting of two one-hour periods per week. This work begins the first Monday in November and ends at the Spring Recess.

Dexter M. Ferry Athletic Field. — By the generosity of Mr. Dexter M. Ferry, of Detroit, an addition of about twenty-five acres has been made to the grounds formerly known as Regents' Field. The combined tract of thirty-five acres lies a few minutes' walk southward from the campus, and is set apart and equipped especially for open-air sports.

Supervision of Athletic Sports. — The general supervision of athletic sports is vested in a Board of Control, consisting of eleven members.* The Board thus constituted has charge of all matters involving the relation of athletic sports to the University; for example, the eligibility of players proposed for any University team, the arrangement of intercollegiate games, the granting of leaves of absence, and the investigation of charges of misconduct on the part of players. The policy of the Board is to foster the spirit of honor and gentlemanliness in athletics, to suppress evil tendencies, and to see that play shall not encroach too much upon the claims of work. For the furtherance of these ends certain specific rules and regulations have been adopted, a copy of which can be had on application to the Secretary of the University.

INTRAMURAL ACTIVITIES

Steps have been taken to furnish competent and adequate instruction, in all branches of athletics, to all students in the University desiring such instruction.

Any student applying for special instruction, or attention, in any branch of athletics will now receive the attention of a competent coach, regardless of the athletic ability of the applicant.

It is also hoped that the work will be of such a nature as to stimulate the growth of all athletic activities, especially of a Non-Varsity character.

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* The Board of Control for the year 1916-1917 consists of Professors Aigler, Peterson, Gram, and Fishleigh, and Mr. Philip G. Bartelme, of the University faculties, Messrs. John D. Hibbard, James E. Duffy, and James O. Murfin, of the Alumni Association, and Messrs. Willis Brodhead, Albert E. Stoll, and James W. Thomas, of the student body. Mr. Bartelme is Director of Outdoor Athletics.

FERRY FIELD EXTENSION

Anticipating the growth of interclass athletics, and the consequent necessity for additional field space, the Athletic Association has purchased thirty-eight and seven-tenths acres of land, immediately adjoining Ferry Field, on the south. This land is now being graded, tiled, and sodded, and will be marked off into gridirons and diamonds for the exclusive use of the class teams.

PHYSICAL TRAINING FOR WOMEN

The Barbour Gymnasium.—The Barbour Gymnasium is named in honor of the Honorable Levi L. Barbour, of Detroit, a former Regent of the University and a liberal contributor to the funds for its erection. The building contains, in addition to the gymnasium proper, the offices of the Dean of Women and the Director of the Gymnasium; a club room and parlors for the college women, a hall (Sarah Caswell Angell Hall) accommodating 550 people, for lectures, meetings, theatrical entertainments, etc. The gymnasium is a large room with floor space 90 x 80 feet, well lighted, well ventilated, and amply equipped with the necessary apparatus for individual and class work. The gallery has a running track 310 feet long. The basement contains dressing rooms, shower baths, and a swimming tank which is open to all women registered in the gymnasium, with instruction in swimming free of charge. Before beginning the gymnasium work each student receives a careful medical and physical examination made by the University Physician for Women, and the Director of the Gymnasium, and the work is assigned accordingly. If a girl is physically unable to undertake the general class work she is given individual work carefully adapted to her own need. Especial attention is given to the correction of faulty posture and any deformity that may be benefited by intelligent exercise. Tennis, baseball, team games, hockey, archery, and cross country walks form part of the fall and spring work. Owing to the necessity of having uniform gymnasium suits they should *not* be purchased before entering college. If it is necessary to do this, communication should first be made with the Director of the Gymnasium in regard to the material and style required.

Palmer Field.—The Women's League has purchased, with the help of the Alumnæ and a very generous gift from the Honorable Thomas W. Palmer, of Detroit, a tract of seven and one-quarter acres of land situated within five minutes' walk of the gymnasium. Hockey and baseball fields, tennis courts, and an archery range provide ample opportunity for varied outdoor exercise.

Class Work.—All Freshman and Sophomore women are required to take and complete satisfactorily, without credit towards the degree, a course in Physical Education to be given twice each week throughout the college year under conditions determined by the Physical Director for Women.

Women students are also required to take, during their first year of residence, a course of six lectures in Hygiene to be given by the Women's Physician.

Students will be excused from these requirements only by permission of the Dean of Women or the Physician for Women.

For detailed information concerning courses see page 130.

ORATORICAL ASSOCIATIONS

In addition to the University instruction in oratory, an active and earnest interest in public speaking is fostered and maintained through the agency of voluntary associations of students, which arrange and conduct debates and oratorical contests and co-operate with similar organizations in other institutions.

UNIVERSITY ORATORICAL ASSOCIATION

The University Oratorical Association was organized by students of the College of Literature, Science, and the Arts, and of the Law School, under the guidance of the professor of oratory, to foster an interest in oratory and debate, and also to participate in the annual contests of the Northern Oratorical League, the Central Debating League, the Mid-West Debating League, and the Intercollegiate Peace Association, and in such other contests as may be arranged by the association.

At the annual oratorical contest held the third Friday of March, the student who takes first honors, represents the University in the annual contest of the Northern Oratorical League. In 1916, the first and second honors were awarded, respectively, to Nathan Earl Pinney and Archie R. Levine.

Kaufman Testimonial.—Nathan M. Kaufman, of Marquette, Michigan, provides annually $150, to be awarded as follows: $100 to the student who shall win first honor in the University Oratorical Contest, and $50 to the student who shall win second honor.

Chicago Alumni Medal.—The Chicago Alumni Association of the University of Michigan offers annually a bronze medal as a testimonial for excellence in oratory. The medal, designed by Mr. Louis H. Sullivan, of Chicago, is given to the student who is awarded the first honor in the University Oratorical Contest.

NORTHERN ORATORICAL LEAGUE

The Northern Oratorical League is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Minnesota, and the University of Illinois. Its purpose is to foster an interest in public speaking and to elevate the standard of oratory, by holding annual contests. The contests are open only to undergraduates.

Lowden Testimonial.—To encourage public speaking in the universities whose oratorical associations compose the Northern Oratorical League, the Honorable Frank O. Lowden, of Chicago, in 1901 established an endowment fund, amounting to $3,500, and placed it in the hands of the Regents of the State University of Iowa, as trustees. From the interest annually accruing therefrom the sum of $100 is awarded to the person receiving first honor at the annual contest of the Northern Oratorical League, $50 to the person receiving second honor, and $25 to the person receiving third honor.

PEACE CONTEST

The Peace Contest is held annually under the auspices of the Intercollegiate Peace Association. Preliminary contests are held in Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin, and the winners of these contests compete in an Interstate Group Contest, held in April each year, and the winners of the various sectional contests throughout the United States will compete in the National Contest, held in May at the annual convention of the Lake Mohonk Conference, New York. The orations must not exceed sixteen minutes in delivery, and must deal with some phase of the general subject of international peace or arbitration. This contest is open to all undergraduate students of the University who are doing at least twelve hours of regular work. The representative of the University of Michigan in 1916 was Clarence Lester Menser.

Peace Testimonial.—The six students who compete in the National Contest are awarded $100, $80, $70, $60, $50, and $40, respectively. Testimonials of $75 and $50 for the first and second honor men are provided for the Michigan Peace Contest, and it is expected that similar testimonials will be provided for the Group Contest.

CENTRAL DEBATING LEAGUE

The Central Debating League is composed of the debating associations of the University of Michigan, Northwestern University, and the University of Chicago. Its purpose is to discuss, in public, leading questions of the day, and in this way to develop ready and useful speakers.

The men who represent the University of Michigan in the Central League contests are selected the week before Thanksgiving. The men chosen for the debates of 1917 were William Theodore Adams, Ralph Moore Carson, George Cornelius Claassen, Archie R. Levine, William Phillips Sanford, and Irving Samuel Toplon.

Cousins Testimonial.—Mr. James Cousins, of Detroit, provides $300, to be awarded in equal amounts of $50 as testimonials to the six students who shall represent the University in the Central League debates.

Alger Medals.—As a memorial to the late Senator Russell A. Alger, who established the Alger Medals, Mrs. Alger contributes annually the sum of $75 for the purpose of furnishing appropriate medals for the six men who appear in the Central League debates.

MIDWEST DEBATING LEAGUE

The Midwest Debating League includes the universities of Michigan, Wisconsin, and Illinois. In this triangular organization each university debating association maintains an affirmative and a negative debating team. Three debates occur simultaneously, the last Friday in March, one at each university.

The men chosen in the preliminaries to represent the University of Michigan in these debates of 1917 were: Samuel Daniel Frankel, Neal D. Ireland, Raymond Frederick Kahle, Leslie William Lisle, Peter Anthony Miller, and Robert William Ward.

Gray Testimonials.—The John S. Gray heirs, of Detroit, provide annually the sum of $300, to be awarded in equal amounts of $50 as testimonials to the six students who shall represent the University in the Midwest debates.

As a memorial to the late John S. Gray these prizes are designated by his heirs as the *John S. Gray Testimonials.*

Gray Medals.—The John S. Gray heirs also provide annually $75 for appropriate gold medals to be given to the six students who shall represent the University in the debates of the Midwest League. These are to be known as the *John S. Gray Medals.*

CUP DEBATE

In May, 1898, the Detroit Alumni Association presented the University Oratorical Association with a silver loving cup, and requested that it be competed for annually by the Alpha Nu and Adelphi Societies in the College of Literature, Science, and the Arts, and the Webster and Jeffersonian Societies in the Law School. The society which wins the cup the greatest number of times in twenty years is to hold it as a permanent trophy. The annual cup debate is held the last Friday in April. In these contests students who have previously won a University honor in debate, or who have been members of a winning cup team, are ineligible to compete. In 1916, the cup debate was won by the Webster Society.

LYCEUM CLUB

The Lyceum Club was organized in 1908 by the department of oratory to give advanced students in oratory experience on the lecture platform. During the past five years two hundred fifty lectures have been given in Michigan towns. The members of the club receive nothing but expenses for their services, their object being self-development. This enables many communities to enjoy the social and educational advantages of a lecture course without the usual financial burdens.

LECTURE COURSE

In addition to the local and intercollegiate contests in debate and oratory offered on its course, the Oratorical Association provides each year, at a low price of admission, a short but attractive course of lectures and readings, with the special end in view of fostering and developing a strong interest in the art of public speaking in the University community.

OTHER UNIVERSITY ORGANIZATIONS

Michigan Union. — The University of Michigan Union was organized and incorporated under the laws of the State of Michigan in 1904. It is a broad, democratic organization to which all Michigan students, alumni, and faculty members are eligible. Its main objects are the democratizing of the student body by breaking down artificial barriers and distinctions, and infusing into the whole body a spirit of loyalty to the university and its ideals, to offer a place for wholesome relaxation for students, and a place for alumni to come to when in Ann Arbor. It is at present housed in temporary quarters in the rear of the new building, which is now in the course of construction, and here it is providing a headquarters and gathering place for all Michigan men. In it are a reading and writing room, recreation rooms, a general dining room, private dining rooms, business office, and rooms in which various student and other committees meet and transact business. Several hundred meetings, including informal lectures, class and departmental dinners and receptions, and society meetings are held here every year. Several of the departmental faculties meet at luncheon here periodically to discuss in an informal way questions relating to their work.

Besides the activities mentioned above the Union maintains an employment bureau for students, a rooming and boarding agency, and many other activities for the benefit of the student body.

The Union is now engaged in a nation-wide campaign among its alumni to secure a million dollars for the erection of a new home to cost about $600,000, the remainder of the larger sum to be used for furnishing equipment and a permanent endowment fund. Nearly all of this fund has been pledged. The success of this movement which has enlisted the hearty support of the President, Regents, and other officers of the University, alumni, and students, seems assured.

With the new building the Union will be able adequately to carry on the great work for which it was organized. That the Union thus equipped will accomplish much socially, educationally, and morally for Michigan students and that it will promote a true university spirit, there can be no doubt. All students are eligible without initiation fee and the annual fee is placed at the nominal sum of $2.50.

Women's League. — The Women's League, an organization of one thousand or more women, made up of undergraduates, wives of members of the Faculties, and alumnæ, was organized in 1890 for general helpfulness to the women students. At the opening of college, committees from the League meet trains and assist the Dean of Women in helping young women in every way. The League in general aids in shaping wisely the social life of the women.

University Musical Society.—The University Musical Society is a body corporate under the laws of the State of Michigan. It has no organic connection with the University, although its membership is restricted to past and present University officers and students. Its Board of Directors includes a number of officers of administration and instruction of the University, and it is under the immediate direction of the Head of the department of Music in the University. The principal efforts of the Society are conducted along three lines: The University School of Music, the University Choral Union, and the University Symphony Orchestra.

The University School of Music. — The University School of Music, situated in Ann Arbor, gives systematic instruction in vocal and instrumental music, such as the University does not undertake to provide. It possesses an ample and highly trained faculty. Students above the rank of freshmen in the College of Literature, Science, and the Arts, of the University, may with the permission of the head of the department of Music in the University, elect not to exceed two hours per semester of practical music in the School of Music to count towards the University degree. Several series of recitals and concerts by members of the Faculty and by advanced students are given during the year, including a series of recitals by members of the Faculty in Hill Auditorium on the first and third Thursdays of each month, open to the University public. Catalogues may be obtained by addressing Professor A. A. Stanley, Director, The University School of Music, Ann Arbor, Mich.

The University Symphony Orchestra.—A complete orchestra of about sixty members from the University and the School of Music, receives thorough training under the head of the Violin Department of the School of Music. It gives several public concerts during the year.

The University Choral Union.—The Choral Union is an organization of students and others, for study and practice of choral music under the direction of the professor of music in the University, and for the promotion of general musical culture. It is one of the largest student musical organizations in the world. Under the auspices of the University Musical Society the following course of concerts, known as the Choral Union Series, is announced for the year 1916-1917:

Pre-Festival Concerts

I. October 12, 1916, Louise Homer, Contralto.
II. November 8, 1916, Fritz Kreisler, Violin Recital.
III. December 12, 1916, Ossip Gabrilowitsch, Piano Recital.
IV. January 26, 1917, The Boston Symphony Orchestra, Dr. Karl Muck, Conductor.
V. February 28, 1917, Harold Bauer, Pianist, Pablo Casals, Violoncellist, Joint Recital.

TWENTY-FOURTH ANNUAL MAY FESTIVAL,
HILL AUDITORIUM, MAY 2, 3, 4, 5, 1917.

Organizations

The Chicago Symphony Orchestra, Founded by Theodore Thomas; Frederick Stock, Conductor.

The University Choral Union and a Supplementary Children's Chorus; Albert A. Stanley, Conductor.

Wednesday Evening—Miscellaneous Concert. Louise Homer, Contralto, soloist. Frederick Stock, Conductor.

Thursday Evening—"The Dream of Gerontius"—Elgar. Christine Miller, Contralto; Morgan Kingston, Tenor; and Gustaf Holmquist, Bass, soloists. University Choral Union. Albert A. Stanley, Conductor.

Friday Afternoon—"The Walrus and the Carpenter"—Fletcher. Ethel Leginska, Pianist. Special Children's Chorus. Albert A. Stanley and Frederick Stock, Conductors.

Friday Evening—Miscellaneous Concert. Amelita Galli-Curci, Soprano, soloist. Frederick Stock, Conductor.

Saturday Afternoon—Organ Recital. Richard Keys Briggs, Organist.

Saturday Evening—"Aida"—Verdi. Maude Fay, Soprano; Margarete Matzenauer, Contralto; Giovanni Martinelli, Tenor; Guiseppe de Luca, Baritone; William Wade Hinshaw, Baritone; and Gustaf Holmquist, Bass, soloists. University Choral Union. Albert A. Stanley, Conductor.

The Columbian Exposition Organ, presented to the University by the University Musical Society, and now known as the **Frieze**

Memorial Organ, in memory of the late Professor Henry Simmons Frieze, is used in this course of concerts.

Philological Society.—The Philological Society is an association of all members of the faculties in the departments of the ancient and modern languages, together with such advanced students in these departments as may be proposed by faculty members for election to it. The society holds regular meetings, at which papers embodying the results of original research are read and discussed. Occasionally lecturers are secured from other universities.

Deutscher Verein.—The Deutscher Verein is an organization whose members are elected upon recommendation from students in German, who have completed Courses 1 to 4 inclusive, or their equivalent. Its purpose is to bring together in a social way those students who are pursuing German courses of an advanced grade, to cultivate thus a facility in the use of the language, to stimulate a deeper interest in contemporary German literature, culture, and life and to establish an *esprit de corps* among future teachers of the language in the state. Occasional lectures are given. Its members also present one or more standard German plays each year.

Cercle Francais.—In connection with the French department, the Cercle Français offers students an opportunity to improve their pronunciation and their general knowledge of the language through the thorough study and presentation of French dramatic masterpieces. The club is composed of active, associate, and honorary members. All associate members are eligible to active membership upon the recommendation of a committee composed of the Director and three student members appointed by the president of the club. Aside from the dramatic performances, the Cercle seeks to further the interest of the French language, literature, and life by weekly lectures given by members of the French department and by distinguished men of letters from abroad.

Michigan Dames.—The Michigan Dames, an organization composed of the wives of graduate and undergraduate students, was founded in 1914, and now numbers about one hundred members. Its aims are social and educational, and special care is taken to make the wives of new students at home in Ann Arbor. All students' wives are urged to become members. Requests for further information should be addressed to The President of the Michigan Dames, Newberry Hall.

Other Organizations.—Other organizations of various nature and purposes exist among the faculty and the student body, which cultivate other interests of the University life not so closely connected with the work of any special department.

The students of the Law School arrange annually for a celebration of Washington's birthday The orator in 1917 was Mr. Charles H. Hamill, A.B. LL.B., of Chicago, Ill.

ADMISSION TO THE UNIVERSITY

The requirements for admission to the various schools and colleges of the University are given in detail in the pages of the Catalogue devoted to those schools and colleges. In brief it may be said that the satisfactory completion of a full four-year course in a standard high school, amounting to at least fifteen units, is required for admission to each of the four colleges, the College of Literature, Science, and the Arts, The Colleges of Engineering and Architecture, the College of Pharmacy, and the College of Dental Surgery, while two years of collegiate work are required for admission to the Medical School, the Law School, and the Homœopathic Medical School.

APPROVED HOMES FOR WOMEN

Since in the judgment of the University authorities it is deemed wise that men and women room in different houses, all undergraduate women in the University, except those living at home, are required to live in the Halls of Residence, Sorority Houses, or League Houses. The latter are under the jurisdiction of the Women's League, and all are approved and supervised by the Dean of Women. These houses are supplied with first floor parlors, and in most of them reside a number of responsible upperclass women who make a distinct effort to develop in each group a sense of responsibility and wholesome ideals.

There are at present at the University of Michigan two residence halls for women—Martha Cook Building and Newberry Residence—which are located on South University Avenue and State Street, respectively, directly opposite the Campus. Both buildings are fireproof, four stories in height, and contain elevators. Martha Cook Building will accommodate 112 students; Newberry Residence, 68 students. With few exceptions rooms in both residences are single. The rooms are heated by steam, lighted by electricity, and furnished. Each residence contains a well equipped laundry and a sewing room for the use of resident students.

Changes in rooming place may be made only with the approval of the Dean of Women. Rooms should be engaged with a definite understanding as to the period of the lease.

Applications for rooms in the League Houses and in Newberry Residence should be made to Mrs. Myra B. Jordan, Dean of Women. Applications for rooms in Martha Cook Building should be addressed to the Social Director of that building.

UNIVERSITY HEALTH SERVICE

The University attempts to conserve the health of students, and to provide that those who become ill, may receive proper medical attention. For this purpose, a University Health Service has been established, with headquarters at 226 South Ingalls street. A regular staff of physicians consult with men and women during the morning hours, and during the afternoon by special appointment. Advice is given, medicines dispensed, and examinations made at the office, without charge. Students seriously ill and requiring hospital attention, if sent by a University Health Service physician to one of the University Hospitals, will receive treatment free of charge for a period up to 60 days. If the student desires aid of a University physician at his room, a charge of $1.00 for a day call and $2.00 for a night call, is made. To prevent loss of time, appointments will be made for students who need the aid of a specialist at the hospital.

Every student taking work in either of the gymnasiums undergoes a thorough physical examination, and those in whom physical defects are detected are referred to the Health Service physicians, who give to such students advice and treatment free of charge. The training in the gymnasium is so arranged as to remedy physical defects as far as possible. Work in the gymnasium is obligatory for all first year students in the Colleges of Literature, Science, and the Arts, and of Engineering and Architecture. Consequently, all those students have the privilege of such an examination and advice, if needed, free of charge. Medical students, on account of more frequent exposure to infection, are expected to undergo a physical examination once during each semester of the four years. Any student in any class may have a physical examination on application, and at an appointed time, at the University Health Service.

The Dental clinics are open to students, the only charge being for material used. All are advised to have their teeth examined at least once a year.

The water supply of Ann Arbor is examined every week, both chemically and bacteriologically, and when it is under suspicion these examinations are made daily, and the student body is informed of the condition of the water when such need arises, by means of bulletins posted about the campus. Since the public water supply was introduced in 1885, no student has been known to contract typhoid fever from this source, with but one exception. In 1894, the water became suddenly infected, and five cases of typhoid fever resulted, but these were mild and the source of infection was promptly detected and removed. On the slightest suspicion of infection of the water supply, students are advised to drink only boiled water until the source of contamination has been found and the water proved to be free from danger.

The air of class rooms and assembly halls is examined both chemically and bacteriologically from time to time, and in this way failure of ventilation is detected and reported.

Students are earnestly recommended to select their rooms with care, and with special reference to hygienic conditions. All rooms should be so arranged as to admit of free ventilation, and it is well to have a study room and a bed room, the latter not to be heated either by day or night, but to be freely exposed from wide open windows to the outdoor air.

The food supply of clubs, fraternities, and sororities is examined free of charge at the Hygienic Laboratory at any time.

Cases of infectious disease likely to injure the health of others are excluded from class rooms and from University attendance. In case of threatened small pox the University offers free vaccination to all students, but those who neglect vaccination and become infected with the disease are subject to such disposition as the Health Officer of the city may direct.

Examination of sputum will be made for any student in actual attendance at the University, at the Health Service Laboratory, at any time, free of charge. Anyone who has a cough which continues for a week or longer should take the sputum to the laboratory and have it tested.

Students are expected to obey the rules and regulations formulated by the University Committee on Sanitation. Failure to comply with these rules and regulations will be investigated, and may lead to discipline.

A course of lectures on General Hygiene is required of medical students, and is open to students from every school or college. These lectures extend through one semester, three times a week, and are attended usually by from 300 to 400 students. Special instruction along the lines of sex hygiene is given to all students, men and women separately.

A physician from the University Health Service will be in attendance upon the Bogardus Engineering Camp and the Biological Station.

ATTENDANCE AND DISCIPLINE

The State of Michigan extends the privileges of the University, with only moderate charges, to all persons of either sex who are qualified for admission. Thus it does not receive patronage, but is itself the patron of those who seek its privileges and its honors. It cannot, however, be the patron of idleness or dissipation. Its crowded classes have no room except for those who assiduously pursue the studies of their choice, and are willing to be governed in their conduct by the rules of propriety.

Students not in their places at the opening of the semester must present written excuses from their parents or guardians for the delay.

Such delinquencies as tardiness, absence, deficiencies, and offences against good order, in the several departments of instruction, are ordinarily dealt with by the Administrative Officers of the school or college in which the student is enrolled. Flagrant cases are reported to the Faculty for adjudication.

Students are suspended or dismissed whenever, in the opinion of the Faculty, they are pursuing a course of conduct seriously detrimental to themselves or the University.

The following is a By-law of the Board of Regents:—

"Whenever any faculty is satisfied that a student is not fulfilling, or likely to fulfill, the purpose of his residence at the University, or is for any cause an unfit member thereof, the President shall notify his parents or guardian, that they may have an opportunity to withdraw him, and if not withdrawn within a reasonable time, he shall be dismissed."

RELATION OF STUDENTS TO CIVIL AUTHORITIES

Students are temporarily residents of the city, and, like all other residents, are amenable to the laws. If guilty of disorder or crime, they are liable to arrest, fine and imprisonment. A rule of the University Senate provides that if a student is arrested, or is convicted of any offense by the civil authorities, he shall be cited to appear before the Faculty of the school or college in which he is matriculated, and shall be liable to suspension or expulsion.

STUDENT ORGANIZATIONS AND INTERESTS

While matters of scholarship and general conduct are looked after by the faculties and administrative officers of the different schools and colleges, all other student enterprises and organizations are under the supervision of two general committees,—the Senate Committee on Student Affairs and the Board in Control of Athletics. By the formal action of the Board of Regents, the accounts of all student organizations, are subject to the approval of the Auditor and Comptroller of Student Organizations, and must be presented to him for audit at least once each year, and as often as he shall require.

The Committee on Student Affairs has jurisdiction over the establishment of student organizations and the management of their affairs and the launching of new enterprises and activities including entertainments of various sorts, and determines the eligibility of students to take part in these activities, as well as to hold offices. The authority of this committee is derived from the University Senate and extends to all non-athletic activities and to all students in every school and college of the University. Activities of various types are supervised directly by appropriate sub-committees, while the question of eligibility to participate in any non-athletic activity is under the immediate charge of the Sub-Committee on Eligibility. The rules governing eligibility, which have been approved by the Senate, and which apply equally to all schools and colleges of the University, are given below.

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

I.

*Public Activities.** Public activities include: — (1) Participation in any oratorical or debating contest, or any dramatic or musical exhibition, (2) Service on student publications, (3) Holding a Class or University Office, (4) Official connection with any of the so-called college functions, such as the Junior Hop, Women's Banquet, and similar activities. The list is not intended to be exhaustive, but merely to indicate the character and scope of the activities referred to.

II.

Eligibility. The manager or chairman of every student activity is required to submit to the Chairman of the Committee on Eligibility a complete list of all students who expect to participate and to ascertain their eligibility before proceeding further with the enterprise. No student may take part in any public activity until an official certificate of eligibility is filed with the proper officer in charge of that activity.

III.

Probation. Students on probation are forbidden to take part in and public activity.

IV.

Warning. Students on the warned list are forbidden to participate in any public activity.

V.

Conditions and Failures. Students having outstanding conditions or failures are prohibited from participating in any public activity except by special permission from the Senate Committee on Student Affairs. In general a grade of D will be considered as a condition.

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* "Participation" is to be interpreted as including specific preparation for any public activity or management thereof.

VI.

Special Students. Special students are prohibited from participating in any public activity except by special permission of the Senate Committee on Student Affairs.

VII.

First Year. No student shall take part in any public activity during his first year of residence in the University, except by special permission of the Senate Committee on Student Affairs. Such special permission will not be granted during the first semester of residence, but may for proper reasons be granted to students who have satisfactorily completed one full semester's work. This shall not exclude such students without conditions and otherwise in good standing, from participating in the public activities of their class.

VIII.

General. The Senate Committee on Student Affairs has the right to prohibit a student from participating in any public activity whenever, in the opinion of the Committee, such participation is detrimental to his college work.

IX.

Extra Mural Activities. Students who are ineligible to participate in public activities within the University are prohibited from aking part in other activities of a similar nature, except by special permission of the Senate Committee on Student Affairs.

X.

Special Permission. The special permission to participate in public activities in exception to Rules V, VI, VII, and IX, will be granted by the Senate Committee on Student Affairs only upon the positive recommendation of the Faculty of the school or college to which the student belongs. Petitions for such special permission must in every case be presented before the participation in the activity is begun.

XI.

Discipline. Cases of violation of these rules will be reported to the Faculty concerned for discipline.

GEORGE P. WILLIAMS EMERITUS PROFESSORSHIP FUND

The University Alumni Association has made contribution for the establishment of the Professor George P. Williams Emeritus Professorship Fund, so named in memory of a former honored professor of Physics in the University. In June, 1914, Librarian Emeritus Raymond Cazallis Davis was appointed beneficiary of the fund.

FELLOWSHIPS, SCHOLARSHIPS, LOAN FUNDS, AND PRIZES*

Ten University Fellowships with a value of three hundred dollars each, have been established by the Board of Regents. These fellows are enrolled as students in the Graduate School and in addition to their studies, are liable to render service to the University to the extent of not more than four hours a week. (For further details see Graduate School). For the year 1916-1917, the holders of these fellowships are: Frank Nelson Blanchard, A.B., Zoology; Robert Ellsworth Brown, A.B., Public Health; Elizabeth Frayer Burnell, A.B., Mathematics; William Henry Cullom, A.B., Mathematics; Hope Fisher, A.M., Rhetoric; Lucien Helm Greathouse, A.B., Chemistry; William Henry Jellema, A.B., Philosophy; Sheridan Ross Jones, A.M., Zoology; Clarence Mertoun Webster, A.B., English; Harry Richard West, A.B., Physics.

Five University Fellowships of five hundred dollars each have also been established on the same terms. For 1916-1917, the holders of these fellowships are: Albert Bradley, A.M., Economics; Floyd August Nagler, M.S.E., Civil Engineering; Elmer Samuel Imes, A.M., Physics; Howard Dykema Roelofs, A.B., Philosophy; M. Selden Ruger, A.M., Chemistry; Charles Earl Sandow, B.S., Botany.

Ten State College Fellowships of three hundred dollars each have been established by the Board of Regents on similar terms to the University Fellowships. The candidates are nominated by the faculties of ten colleges in the State of Michigan. For 1916-1917, the holders of these fellowships are: Thomas Burdon Dimmick, B.S., Civil Engineering, (Michigan Agricultural College); Helen F. Cone, A.B., Oratory, (Olivet College); Thomas Morris Griffith, A.B., Rhetoric, (Hillsdale College); Alfred Garlock Papworth, A.B., Zoology, (Alma College); Margaret Scott Pengelly, A.B., Botany, (Kalamazoo College); Robert Phillips, A.B., Sociology, (Albion College); Barbara Louise Schaefer, A.B., English, (Hillsdale College); Anna Laura Sebring, A.B., English, (Alma College); Iva Irene Swift, A.B., Semitics, (Adrian College); John Albert Tillema, A.B., Economics, (Hope College).

Buhl Classical Fellowship. — Mrs. Theodore D. Buhl has generously continued the provision made by the late Theodore D. Buhl, of Detroit, for Classical Fellowships for the year 1916-1917. For the current year the holders of the Fellowships are: James Alexander Kerns, A.B., Greek; and Bruno Meinecke, A.B., Latin.

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* The most of the funds here mentioned are restricted in use to the College of Literature, Science, and the Arts, and the Graduate School, though some of them are also available in other Colleges of the University.

Angeline Bradford Whittier Fellowships in Botany. — These Fellowships have been established in memory of his mother by Joseph Bradford Whittier, of Saginaw. The principal sum of the endowment is four thousand dollars. One fellowship of the amount of four hundred dollars has been established. The holder of this fellowship for the year 1916-1917 is Frieda Cobb, A.B.

Fellowships in Gas Engineering. — The Michigan Gas Association has since 1900 contributed about one thousand dollars annually for the investigation of problems connected with the manufacture and utilization of gas. About four-fifths of this amount is usually available for fellowships. The holders of these fellowships for the year 1916-1917 are: Harold Orlin Andrew, B.Ch.E., and Frederick Clifford Binnell, B.Ch.E.

Charles James Hunt Fellowship. — In July, 1900, Mr. Charles James Hunt, of Detroit, a graduate of the University of the Class of 1846, and wife, conveyed by deed, to the Board of Regents, in trust, the title to certain pieces of real estate, subject to Mr. Hunt's life-interest in the income to be derived therefrom, and to the life-interests of other persons named in the deed. After the terminations of these life-interests "one or more fellowships in the University of Michigan" are to be established in accordance with conditions named in the deed of trust and in accompanying documents, and are to be known as the Charles James Hunt Fellowships.

Emma J. Cole Fellowship in Botany.—In 1910 Miss Emma J. Cole bequeathed to the University the residue of her estate, the proceeds to be used for the establishment of a fellowship in Botany.

The holder of the Fellowship for 1916-1917 is Clinton Albert Ludwig, M.S. Ag.

Acme White Lead and Color Works Fellowship.—The Acme White Lead and Color Works, of Detroit, has given a fellowship to the value of five hundred dollars for the study of the protection of concrete and stucco from disintegration. The holder of the Fellowships for 1916-1917 is Erle Arlington Brock, B.S.

Carl Braun Fellowship. — In December, 1913, Mrs. Elise L. Braun, of Toledo, Ohio, gave to the University the sum of ten thousand dollars, the proceeds of which are to be used for the establishment and maintenance of a fellowship to be known as the Carl Braun Fellowship. The holder of this Fellowship for the year 1916-1917 is Agnes Carr Vaughan, A.M.

R. D. Chapin Fellowship in Highway Engineering. — In 1915 Mr. R. D. Chapin, of Detroit, gave the University the sum of fifteen hundred dollars for the support of a fellowship in highway engineering for two years, five hundred dollars to be paid each year to the holder of the fellowship and two hundred fifty dollars to be used towards the expenses of the researches undertaken. The fellowship is open to graduates of the University of Michigan or of the Michigan Agricultural College, preference being given to residents of the State. The holder of this fellowship for the year 1916-1917 is Eric Edwin Blomgren, B.C.E.

Paper Manufacture Fellowship. — In the summer of 1915 the paper manufacturers of Michigan contributed generously to the support of research in the chemistry of paper manufacture, and the Regents of the University authorized the establishment of a Michigan Pulp and Paper Manufacturers' Fund. From this fund Clarence William Hallahan, A.M., now holds a Fellowship of five hundred dollars.

Cholett C. Beach Fellowship in Bacteriology.—In the fall of 1915 Mr. W. R. Wooden, of Battle Creek, gave the University twelve hundred dollars for the support of a Fellowship in Bacteriology for one year, in honor of the late Cholett C. Beach, of Battle Creek. The holder of this fellowship is Carl Cleghorn Warden, Ph.B., M.D.

Detroit Edison Company Fellowship in Chemical Engineering.—In the fall of 1915 the Detroit Edison Company gave the University six hundred dollars for the support of a Fellowship in Chemical Engineering for one year, The holder of this fellowship for the year 1916-1917 is Robert Samuel Archer, B.Ch.E.

Detroit Copper and Brass Rolling Mills Fellowship.—The Detroit Copper and Brass Rolling Mills have established a fellowship in Chemical Engineering, with a value of five hundred dollars, for the year 1916-1917. The holder of this fellowship for the year is Harold James Smith, B.Ch.E.

The Detroit Steel Castings Company's Fellowship.—The Detroit Steel Castings Company has established a fellowship for the investigation of flaws in steel casting with particular application to the pots used in case-hardening and heat-treating steel. This fellowship has a value of five hundred dollars, and has been awarded to Edward Robert Young, B.Ch. E., for the year 1916.

The United States Radiator Company's Fellowship. — The United States Radiator Company of Detroit has established a fellowship for the year 1916-1917. The annual stipend is five hundred dollars. The fellowship is established for the investigation of problems connected with the application of different forms of radiators, and other heating devices in heating installations. The holder of this fellowship for the year is Ivan Norman Cuthbert, B.E.E.

Detroit Edison Company Fellowship in Highway Engineering.—In July, 1916, the Detroit Edison Company gave the University seven hundred fifty dollars for the support of a Fellowship in Highway Engineering. The holder of this fellowship for the year 1916-1917 is Harry Carman Coons, B.C.E.

Phillips Scholarships.—The late Henry Phillips, Jr., of Philadelphia, Pa., made provision in his will for the establishment and maintenance of six scholarships, to be known as the Phillips Scholarships, in the College of Literature, Science, and the Arts of the University of Michigan. By the terms of the will these scholarships are to be given only to candidates for the degree of Bachelor of Arts, who excel in the Greek and Latin studies required for admission to the University; and they are to be awarded by a committee consisting of the President of the University, the Dean of the College, the senior professor of Greek, and the senior professor of Latin.

Of the six scholarships contemplated in the bequest, three have been established, with an income of fifty dollars each. They are awarded to students, otherwise properly qualified, under the following conditions:

(a) Candidates for the Phillips Scholarships shall upon their entrance into the University be examined upon four units of Latin, and the committee in charge may award a scholarship to the student obtaining the highest grade; if more than one paper reaches a satisfactory degree of excellency, more than one scholarship may be awarded at the discretion of the committee.

Only the examination in Latin shall be absolutely required; but any student who has had preparation in two units of Greek may elect to be examined upon them as well as upon four units of Latin. If the combined grade of his examinations in Greek and Latin is equal or superior to the grade of a candidate who presents Latin only, he will be given the preference in the awarding of the scholarships.

(b) The successful candidate or candidates shall be required during the year of tenure to pursue each semester one full course of four hours in Greek and one full course of four hours in Latin.

(c) The scholarship held by any successful candidate may, upon application to the Committee, be renewed for a second year, provided that the applicant has attained in his courses in Latin and Greek a grade not less than B and continues the study of both languages during his second year, to the amount of three hours each per semester.

(d) The Committee in charge of the scholarships shall determine, after considering the merits of the individual case, whether it is more expedient to renew the scholarships for a second year or to award new ones.

(e) The provisions of the will regarding the general character of the candidates shall be observed.

Application for admission to this examination must be made to the Dean of the College on or before October 21.

Lucinda Hinsdale Stone Memorial Scholarship.—The Michigan State Federation of Women's Clubs has presented to the University the sum of three thousand dollars, as a portion of a fund to be known as the Lucinda Hinsdale Stone Supplementary Loan Scholarship Fund, the income of which is to be administered by the President of the University, the Dean of Women, and a third person of their appointment (who shall be a woman), for the benefit of women who are students in the University. On an average three young women each year have been assisted by the income from this fund.

Detroit High School Scholarships.—The alumni of the Detroit High School have established several scholarships open to graduates of that school. The first steps toward raising a fund for this purpose were taken in 1891; and a corporation has since been formed under the title of the Detroit High School Scholarship Fund Association.* From four to six students at a time usually enjoy the benefit of the fund. Several of the beneficiaries have received degrees at the University. One of the scholarships is known as the Mary C. Leete Memorial Scholarship, in memory of a teacher who died in 1894.

In July, 1915, a further sum of $1,300 was given for the establishment of a loan fund open to a graduate of the Detroit Central High School, and to be known as the Charles Francis Adams Loan Fund, in memory of a teacher who died in 1914.

Saginaw High School Scholarships. — Four Scholarships, with an annual income of two hundred and fifty dollars each, established by the Honorable Arthur Hill, of Saginaw, W. S., and known as the John Moore, the Wells-Stone, the Alonzo R. Bingham, and the Otto Roeser scholarships, are open to graduates of the Saginaw, W. S., High School.

The Saginaw, E. S., High School offers several scholarships of varying amounts to deserving graduates of that school. One of these is known as the Heavenrich Brothers & Co.'s Scholarship, and is provided by the mercantile firm of that name. Another, designated as the High School Scholarship, is cared for largely by the High School Lyceum. A third is known as the A. R. Loveland Scholarship. The graduating class of 1900 also made provision for a scholarship to be available every sixth year. These scholarships are all administered as loan funds.

Grand Rapids High School Scholarships. — The High School Scholarship Association of Grand Rapids is a body incorporated under the State Law, for the purpose of assisting graduates of the

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* The State Legislature in 1893 passed an act providing "that five or more persons of full age, residing in the State of Michigan may associate and incorporate themselves together for the purpose of establishing scholarships in the University of Michigan, for the benefit of graduates of the high schools of the State." A corporation organized in accordance with the provisions of this act "shall under the general management of not less than five, nor more than fifteen trustees," and "shall, in law and equity, be capable of taking and receiving real and personal estate....not exceeding one hundred thousand dollars in the aggregate, for the purpose of its incorporation."

Grand Rapids High School to secure a college education in the College of Literature, Science, and the Arts, or the Colleges of Engineering and Architecture, of the University of Michigan.

Perry Scholarship Fund.—The Alumni Association of the Ann Arbor High School, in 1898, established a fund, in memory of Walter Scott Perry, graduate of the University in the Class of 1861, and for twenty-seven years Superintendent of the Ann Arbor schools.

The purpose of the fund is to assist graduates of the school in procuring an education in the College of Literature, Science, and the Arts of the University of Michigan. It is administered as a Loan Fund,* repayments to be made by beneficiaries under regulations prescribed by the Board of Directors of the High School Alumni Association.

Saginaw Valley Alumnae Association Scholarship Fund.—The Saginaw Valley Alumnæ Association in 1904 established a fund for the aid of undergraduate women in the College of Literature, Science, and the Arts. The fund is administered as a Loan Fund under the direction of the Dean of Women and representative Alumnæ.

Seth Harrison Scholarship Fund.—The Seth Harrison Scholarship Fund was established in memory of her father, by Mrs. Clara Harrison Stranahan, of Brooklyn, N. Y. The principal of the fund was originally twenty-five thousand dollars, but this has been increased by additions from unexpended income. The income is to be used, on conditions specified in the covenant between Mrs. Stranahan and the Board of Regents, for the benefit of descendants of Seth Harrison who may be pursuing studies in the College of Literature, Science, and the Arts of the University of Michigan, whenever applicants properly qualified present themselves. Provision is made, however, for applying the income of the fund to scholarships for other persons, "if at any time there shall be a period of seven years during which there are no qualified applicants," descendants of Seth Harrison.

Margaret Smith Hunt Scholarships, James B. Hunt Scholarship, and Charles James Hunt Scholarship.—In July, 1900, Mrs. Margaret Elsie Hunt, of Detroit, a student in the University in the year 1878-9, conveyed by deed to the Board of Regents, in trust, the title to certain pieces of real estate, subject to Mrs. Hunt's life interest in the income to be derived therefrom. After the termination of this life-interest, "one or more scholarships in the undergraduate course of studies in the Department of Literature, Science, and the Arts," are to be established in accordance with conditions named in the deed of trust and in accompanying documents, and are to be known as the Margaret Smith Hunt Scholarships.

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* In 1899 an act was passed by the State Legislature containing the following provisions: "Any five or more persons of full age residing in the State of Michigan may associate and incorporate themselves together for the purpose of establishing loan funds for the benefit of school scholars and students of this State, to assist them to attend the University of Michigan" (and other State educational institutions). "All the funds received by any corporation organized under this act shall be used, after paying necessary expenses, for the exclusive purpose or purposes set forth in the articles of association....Such corporation shall in equity and law be capable of taking and receiving real and personal estate....not exceeding twenty-five thousand dollars, in the aggregate, for the purpose of its incorporation."

In February, 1902, Mr. and Mrs. Hunt conveyed by deed to the Board of Regents, in trust, the title to a certain other tract of land, subject to Mrs. Hunt's life-interest in the income to be derived therefrom and to certain other life-interests, and conditions named in the deed. After the termination of these life-interests, and in accordance with conditions named in the deed of trust, and in accompanying documents, a portion of the income derived from the trust is to be devoted to the maintenance of the James B. Hunt Scholarship, so named in memory of the father of Charles James Hunt; a second portion to the maintenance of a scholarship, to be known as the Charles James Hunt Scholarship; and the remainder to the maintenance of Margaret Smith Hunt Scholarships in addition to those previously provided for.

W. W. Wedemeyer Scholarship. — The Class of 1894 established a fund, the income of which is "to be used as a loan fund for the benefit of needy and worthy undergraduates in the Literary Department," on condition that the Board of Regents "shall require of each student or students as may receive the benefit of such fund a promise to repay to said Board the sum loaned on such terms as shall seem to said Board to be reasonable; it being the intention of the donors of said fund that the same shall be kept intact, as far as possible."

In February, 1913, at the request of the donors the fund was named the W. W. Wedemeyer Scholarship Fund, in memory of the late Hon. W. W. Wedemeyer, an honored member of the Class of 1894.

Scholarship of the Class of 1897.—The Class of 1897 has established a fund, a portion of which is available as a loan fund.

Scholarship of the Class of 1898.—The Class of 1898 has established a scholarship fund, the proceeds of which are not yet available.

Scholarhip of the Law Class of 1899.—A small sum, contributed by members of the Law Class of 1899, is available as a loan fund.

Students' Lecture Association Fund.—Under the condition of the gift made to the Board of Regents by the Students' Lecture Association, a small fund is available for loan to students in any school or college of the University. All loans are to be made through a committee consisting of the President of the University, the Dean of the College of Literature, Science, and the Arts, the Dean of the Medical School, and the Dean of the Law School, and they are to be secured by note payable one or more years after the borrower has completed his university course.

Newton Van Der Veer Loan Fund.—In January, 1900, the Regents accepted from Mrs. George Wagner a sum of money as the nucleus of a fund to be known, in memory of her father, as the Newton Van Der Veer Loan Fund; and to be used in loans "to needy students in such amounts and under such conditions as the executive head of the University may deem proper and wise."

Detroit Collegiate Alumnae Fund.—In March of 1907 the Detroit Branch of Collegiate Alumnæ established a fund for the aid of undergraduate women in the University. This fund is administered as a loan fund under the direction of the Dean of Women and representative Detroit Alumnæ.

Ann Arbor Collegiate Alumnae Fund.—The Ann Arbor Branch of the Association of Collegiate Alumnæ has established a fund for the aid of undergraduate women in the College of Literature, Science, and the Arts. This fund is administered as a loan fund under the direction of the Dean of Women and a committee of Alumnæ

Webster Loan Fund.—In February, 1909, the Regents accepted from Mr. John R. Webster and his son, Mr. John P. Webster, a sum of money for the foundation of a scholarship. It is administered as a loan fund.

Alice Freeman Palmer Scholarship.—The Alumnæ of the University are trying to raise five thousand dollars to endow this scholarship, and a considerable sum has already been paid in to the University Treasurer.

Joseph A. Bartholomew Scholarship.—The late Joseph A. Bartholomew bequeathed to the University of Michigan property on the income of which is to be established a scholarship of the value of five hundred dollars annually.

Anna M. Chandler Scholarship Fund.—The Alumni of the Marquette, Michigan, High School have given to the University the sum of one thousand dollars to be known as the Anna M. Chandler Loan Fund, in honor of Miss Anna M. Chandler, A.B., 1874, for thirteen years superintendent of schools of Marquette. The money is administered as a loan fund, preference being given to graduates of the Marquette High School.

The Henry Strong Scholarships.—The heirs of the late Henry Strong, of Lake Geneva, Wis., have established in memory of their father, three scholarships of the value of two hundred fifty dollars each. One of these scholarships is held during the year 1916-1917 by Anita Marie Kelley.

The James L. Babcock Scholarship Fund.—The late James L. Babcock, of Ann Arbor, Michigan, bequeathed to the University the sum of five thousand dollars in trust, to be loaned out and kept at interest, said interest to be used annually and perpetually to help educate a worthy young man or worthy young woman as the case may be. The income, known as the James L. Babcock Scholarship Fund, is administered by the President and Secretary of the University and the Professor of Music in the College of Literature, Science, and the Arts; and is awarded each year to a student who is especially interested in music and who desires to elect work in the department of Music. The student selected must, in addition to being especially interested in the subject of music, have attained at least an average standing in other subjects at the University, and if, during any year, no candidate meeting the conditions can be found, the income from the fund is added to the principal. The holder of the scholarship for 1916-1917 is Horace Lee Davis.

Marsh Scholarships.—In 1916 the late Elia M. Walker bequeathed to the University the sum of ten thousand dollars, the income of which is to be used for the establishment of two or more scholarships named in honor of the donor's parents, John Pitt Marsh and Fanny Ransom Marsh.

William James Olcott Scholarship.—In June, 1916, Mr. William J. Olcott, of Duluth, Minnesota, gave to the University the sum of five thousand dollars for the establishment of a scholarship open to students in the College of Engineering. The amounts awarded, when repaid, shall accumulate towards the foundation of further scholarships.

McGowan Loan Fund.—In November, 1915, Mrs. Josephine P. McGowan gave to the University the sum of five hundred dollars for the establishment of a loan fund for needy students in the College of Literature, Science, and the Arts, in memory of her husband, the late Hon. Jonas H. McGowan, Regent of the University from 1870 to 1877.

John Frank Dodge Loan Fund.—In November, 1915, Mr. John F. Dodge, of Detroit, gave to the University the sum of $10,000 for the establishment of a loan fund for worthy juniors and seniors in the College of Engineering.

F. M. Hamilton Loan Fund.—In December, 1915, the heirs of the late Francis M. Hamilton, A.B., 1869, of Ann Arbor, gave to the University the sum of one thousand dollars for the establishment of a loan fund.

Eliza Mosher Loan Fund.—In April, 1916, the New York Alumnæ Association gave to the University the sum of one hundred dollars to establish a loan fund for women of the University in honor of Dr. Eliza Mosher, the first Dean of Women.

Michigan Daughters of the American Revolution Loan Fund.—In April, 1916, the Daughters of the American Revolution of the State of Michigan gave to the University money for the establishment of a loan fund for senior women in the College of Literature, Science, and the Arts.

Newell and Nancy Eddy Avery Memorial Loan Scholarship Fund.—A donor who prefers to remain unknown has given to the University the sum of five thousand dollars, the income of which is to be used to establish a loan fund for junior and senior women in the College of Literature, Science, and the Arts.

Florence Huson Scholarship. — In 1916 the late Dr. Florence Huson bequeathed to the University the sum of six thousand dollars for the establishment of a scholarship for women students, to be administered as a loan fund.

Alice Hosmer Preble Scholarship Loan Fund.—Friends of Dr. Robert B. Preble, of the class of 1889, and of Mrs. Robert B. Preble, of the class of 1888, have given to the University the sum of $2,500 for the establishment of a scholarship loan for women students to be known as the Alice Hosmer Preble Scholarship Loan Fund, in memory of and to continue the work of Mrs. Preble.

The George C. Caron Scholarship Fund.—In January, 1917, Dr. and Mrs. George C. Caron, of Detroit, gave to the University the sum of $2,000 for the establishment of a scholarship in memory of their son, the late George C. Caron, Jr., of the class of 1914. The beneficiaries are to be seniors giving special attention to journalism or seniors in the Homœopathic Medical School. The scholarship is administered as a loan fund.

The Jane Turner Memorial Gift Fund. — In January, 1917, Miss Mary E. Turner, of Detroit, gave to the University the sum of $3,000, to be used as a loan fund for women students in the University. This fund is named in memory of her sister, the late Jane Owen Turner, a student during the year 1896-1897.

Good Government Club Prize.—The income of the sum, originally five hundred dollars, which has since grown to twelve hundred dollars, presented to the Board of Regents by the Good Government Club of the University, is available, under the conditions of the gift, in the form of books to be awarded as a prize to that student of the graduating class in the College of Literature, Science, and the Arts who has done the most distinguished work as an undergraduate in the field of political science. In 1916 the prize was awarded to Eber Malcolm Carroll.

The Todd Prizes.—Honorable A. M. Todd, of Kalamazoo, Michigan, offers to the students of this University two prizes of one hundred dollars each for the best essays on certain specified political, governmental, and sociological themes.

These prizes may be competed for by students enrolled in any school or college of the University, who have taken an academic degree here or at any other reputable college or university, and by undergraduate students of any college or school whose record indicates that they will probably graduate in 1916 or 1917. No student is allowed to compete for more than one of the prizes. The essays should not be unduly expanded. Each writer should sign his essay with an assumed name or motto and should send in with it, in a sealed envelope, his real name and his home address, placing the assumed name or motto on the outside of the envelope. He should deposit the essay with the President of the University on or before May first.

The Field Poetry Prize. — A prize of one hundred dollars has been offered each year since 1909 by Mr. Nelson C. Field, of Kansas City, for the best written poem by an undergraduate. Poems for this competition should be sent to the head of the Department of Rhetoric not later than May 1.

Michigan Menorah Society Prize.—Mr. Julius Rosenwald, of Chicago, Illinois, has given to the University of Michigan an annual sum of one hundred dollars, to be awarded as a prize for an essay by an undergraduate of the University of Michigan, on a topic dealing with the literature, the history, and the achievements of the Jewish people. He has offered this prize with a view of stimulating a general and intelligent interest in a field which promises so well for the disclosing of one of the sources of our modern civilization, the Hebraic, the other being the Hellenistic. The prize is known as the "Michigan Menorah Society Prize," a society organized at the University for the study of Hebraic culture and ideals, which Mr. Rosenwald desires to encourage.

The award is made by a committee of three, appointed by the President of the University, one member, however, to be nominated by the Michigan Menorah Society.

The award is given only for essays showing sufficient merit. In case the judges should conclude that none of the essays presented deserves recognition, the year succeeding two prizes will be offered, each in the sum of one hundred dollars. If two essays should be of equal merit, the judges may divide the prize equally, awarding to each essay the sum of fifty dollars.

Advertising Competition Prize. — In January, 1914, a donor, who preferred that his name should not be made public, tendered to the University the sum of five hundred dollars annually for three years, to be used as prizes in an advertising competition, open to all students in the University. The administration of this prize is in the hands of the committee on the courses in journalism, of which Professor F. N. Scott is chairman.

STUDENT SELF HELP

While the University does not undertake to furnish manual labor or other opportunities for work to students, yet a considerable number find opportunities in the city for remunerative labor, to assist in defraying their expenses. A word of caution is needed, however. Students should not undertake so much outside work as to interfere with their studies or injure their health.

The Students' Christian Association and the Michigan Union both maintain free of charge employment bureaus for men, whereby many students are assisted in finding positions to earn money. All women students desiring employment should apply to the Dean of Women.

FEES AND EXPENSES

All Fees Must be Paid in Advance or at the Time of Registration.—A by-law of the Board of Regents provides that no student or graduate shall be allowed to enjoy the privileges of the University until he has paid all fees that are due. The matriculation and annual fees must be paid in full at the time of registration. The laboratory fees and other special fees are payable at or before the time of enrollment in the class. The graduation fee and the teacher's diploma fee must be paid before the candidate is recommended by the faculty. Those graduating or taking a teacher's diploma on Commencement Day must pay the required fee on or before a fixed date preceding Commencement Day, which date will be posted in due season by the Secretary. Holders of fellowships or of scholarships are required to pay the matriculation fee (if not already paid), the annual fees, graduation fee, laboratory expenses, and other similar charges, the same as the other students of the school or college in which their work lies.

In view of the fact that no variation can be made from the rule that all fees are due and payable in advance, no prospective student should come to Ann Arbor for registration without a sum sufficient to cover all his fees.

Residence.—*The burden of registering under proper residence is placed upon the student;* and it is the duty of each student at registration, if there be any possible question of his right to legal residence in Michigan, *under the rules of the Regents,* to raise the question with the registration officer and have such question passed upon and settled by the proper officers of the University, previous to registration. Residence in Michigan cannot be gained while one is enrolled as a student at the University. Any student who registers improperly under this rule shall, when discovered, be required to pay not only the proper non-resident fees but shall be assessed as an addition to the annual fee for that year, the sum of $10.

Matriculation Fee.—Every student, before entering a school or college of the University, is required to pay a matriculation fee. This fee, which, for citizens of the United States, legally resident in Michigan, or their wards, is *ten dollars,* and for others, *twenty-five dollars,* is paid but once, and entitles the student to the privileges of permanent membership in the University. Aliens who have their first naturalization papers will be regarded as citizens of the United States.

Annual Fees.—(See also "Fee for Second Semester.") In addition to the matriculation fee, every student has to pay an annual fee for incidental expenses, and, in some schools or colleges, a small additional fee for special purposes.. These fees are paid the first year of residence at the University, and every year of residence thereafter. Resident graduates are required to pay the same annual fees as undergraduates. The annual fees in the several schools and colleges of the University are as stated below. By "Michigan students" is meant those who are citizens of the United States, legally resident in Michigan, or their wards.

College of Literature, Science, and the Arts: for Michigan students, *forty-two dollars;* for all others, *sixty-two dollars.* Students in this College who are pursuing a combined curriculum, and, in consequence, are registered at the same time in one of the professional Schools are required to pay the annual fee due from students in such professional Schools instead of the annual fee of the College of Literature, Science, and the Arts.

Colleges of Engineering and Architecture: For Michigan students, *fifty-seven dollars;* for all others, *eighty-seven dollars.* The fee required from graduate students who are granted the privilege of pursuing studies for an advanced degree *in absentia* is ten dollars for each year of registration.

Medical School, (including laboratory fees): for Michigan students, *one hundred dollars;* for all others, *one hundred twenty dollars.* The fee required for graduate students who pursue special advanced laboratory courses in this School is, in addition to the ordinary laboratory expenses, ten dollars for each course taken.

Law School: for Michigan students, *sixty-seven dollars;* for all others, *seventy-seven dollars.*

College of Pharmacy: for Michigan students, *fifty-seven dollars;* for all others, *seventy-seven dollars.*

Homœopathic Medical School, (including laboratory fees): for Michigan students, *one hundred dollars;* for all others, *one hundred twenty dollars.*

College of Dental Surgery: for Michigan students, *one hundred seven dollars;* for all others, *one hundred twenty-seven dollars.* A further charge of ten dollars a year is made to cover the cost of certain special supplies provided by the University.

Graduate School: for Michigan students, *forty-two dollars;* for all others, *sixty-two dollars.* The fee required from graduate students who are granted the privilege of pursuing studies for an advanced degree *in absentia* is ten dollars for each year of registration.

Fee for Part Time Students: Persons engaged in teaching in public, parochial, or private schools, who are regularly admitted as students in the College of Literature, Science, and the Arts, or the Graduate School, may elect not more than five hours a week, upon the payment of a fee of *ten dollars* in lieu of the regular annual fee. Such students must pay the matriculation fee, the same as other students, and are subject to the same rules as are all other students regarding the time of registration, etc. This privilege of enrolling at an annual fee of ten dollars is extended to students in the Graduate School who have completed their course work for the doctor's degree, but have not completed the thesis requirement, and to practicing engineers and physicians.

Second Semester Fee.—A student who registers at the beginning of the second semester is required to pay 60% of the prescribed annual fee (see refund of fees (g) below).

Refund of Fees.—(a) No student will be entitled to a refund except after surrender to the Secretary of the University of the student's original receipt from the Treasurer of the University and the surrender of all tickets issued to such student for athletic events not yet having occurred.

(b) No refund will be made to any student expelled, suspended, or requested to withdraw on account of conduct or poor scholarship.

(c) No refund or reduction of matriculation fee is made except in case of those withdrawing within the first two weeks after registration.

(d) Any student who withdraws voluntarily and in good standing not more than two weeks after his registration shall be entitled to a refund of his entire annual fee, together with the matriculation fee.

(e) A student who withdraws thus more than two weeks and less than eight weeks after his registration is entitled to a refund of one-half his annual fee.

(f) A student who withdraws thus more than eight weeks after the beginning and not later than the end of the semester of registration is entitled to a refund of 40% of his annual fee.

(g) The 40% refunded to students enrolling at the beginning of the second semester (see "Second Semester Fee" above) shall be included in determining any further refund to withdrawing students under (d) and (e) above.

(h) A student who transfers at the beginning of the second semester from one school or college to another in which the annual fee is higher shall be required to pay an additional amount sufficient to bring the total fee to that in the latter school or college.

Fee for Special Entrance Examinations. — An applicant for admission to any college of the University who presents himself for the entrance examinations at a date later than that announced in the University Catalogue is required to pay the University Treasurer a fee of *five dollars* before he can receive permission to take the examinations.

Laboratory Expenses.—Students who pursue laboratory courses of study (except as regularly matriculated students in the medical schools), are required to pay for the materials and apparatus actually consumed by them. The deposits required in advance are different for the different courses, ranging from *one to twenty dollars.* The laboratory expenses of students vary with their prudence and economy. In the chemical laboratory the average expense for each course is about *one dollar and twenty cents* a week.

The laboratory fee must in all cases be paid to the Treasurer of the University before the student may enroll in the class.

Gymnasium Expenses.—A charge of *two dollars* a year is made for the rental of a locker in Waterman gymnasium, *one dollar* for a locker in Barbour Gymnasium.

Graduation Fee.—The fee for graduation is *ten dollars.* The by-laws of the Board of Regents prescribe that no person shall be recommended for a degree until he has paid all dues, including the fee for graduation.

Teacher's Diploma.—The fee for the Teacher's Diploma is *two dollars,* which must be paid in advance of recommendation.

Fees for Summer Session.—(a) In the College of Literature, Science, and the Arts: a uniform fee of *twenty-one dollars* for the session is required of all students. (b) In the Colleges of Engineering and Architecture: a uniform fee of *twenty-one dollars* for the session is required; an additional fee of *ten dollars* is required of all students who take the summer field work in surveying. (c) In the Medical School and in the Law School: the fees vary with the amount and character of the work taken. Further information is given on subsequent pages in the chapter relating to the Summer Session.

Other Expenses.—Students sometimes obtain board and lodging in private families for from four to six dollars a week. More frequently they join clubs, in which the cost of board is from three and a half to four and a half dollars a week. Room rent varies from one to three dollars or more a week for each student. The annual expenses of students, including clothing and incidentals, are, on the average, about five hundred dollars. The University does not undertake to furnish manual labor to students; yet a number find opportunities in the city for remunerative labor. For a further statement concerning student employment see page 98.

There are no dormitories for men, and no commons connected with the University. The Christian Association maintains bureaus of information regarding rooms and board, and provides other special facilities for new men students. Two residence halls for women accommodate about one hundred fifty women. There are also a considerable number of approved houses for women conducted as cottage dormitories. Women students should, in advance of their arrival, communicate with the Dean of Women regarding lodgings. (See page 82.)

College of Literature, Science, and the Arts*

The College of Literature, Science, and the Arts owes its name to a provision in the legislative act under which the University was organized in the year 1837, the nomenclature Department being changed to College by the Board of Regents in January, 1915. Its aim is to cover the broad field of general university study of the ancient and the modern languages and literatures, of history, philosophy, mathematics, science, and the liberal arts, as distinguished from the more special work of the professional schools in engineering, medicine, law, pharmacy, and dentistry; and it offers a large number of courses of instruction, from which the student is allowed to choose such as he is qualified to pursue.

The Graduate School formerly maintained in connection with this College has been reorganized to include graduate work throughout the University and is under the direction of a Dean and an Executive Board.

The academic year extends from Tuesday preceding the first Thursday in October† to the last Thursday in June (October 2, 1917, to June 27, 1918).

REQUIREMENTS FOR ADMISSION**

ADMISSION OF CANDIDATES FOR A DEGREE

[For admission to advanced standing, see page 120.]

[For admission of students not candidates for a degree, see page 121.]

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* Formerly known as the Department of Literature, Science, and the Arts. The new nomenclature was adopted by the Board of Regents in January, 1915.

† Except in years preceding leap years, when it begins upon the Tuesday next preceding the first Wednesday in October.

** It is rarely necessary to come to Ann Arbor for a personal interview. Arrangements for admission can be made by mail, provided the communications are complete and definite and the credentials are official. Applicants for admission on advanced standing from other colleges or normal schools should address the Dean. Those seeking admission as freshmen should address the Registrar.

Admission to this College is gained only by examination or by certificate. Applicants for admission must be at least sixteen years of age, and must have completed the requirements for admission as here described. Fifteen units are required for admission, a unit meaning the equivalent of five recitations a week in one branch of study for one year, amounting in the aggregate to not less than one hundred twenty sixty-minute hours in the clear. Two to three hours of laboratory, drawing or shop-work will be counted as equivalent to one of recitation.

ADMISSION ON EXAMINATION

The fifteen units presented for admission on examination must all be chosen from Group I. They must embrace two subjects of three units each, and must include three units of English Composition and Literature, two units of a Foreign Language, one unit of Algebra and one of Geometry, and one unit of one of the sciences, Physics, Chemistry, Botany, or Zoology.

ADMISSION ON CERTIFICATE

Only those applicants are admitted on certificate who are officially recommended graduates of accredited high schools and have completed a full four-year curriculum in a standard high school, covering at least fifteen units, in accordance with one of the following plans.

Plan A. The fifteen units presented for admission on certificate, (except by those entering from especially approved schools, see Plan B) must include three units of English Composition and Literature, two units of a Foreign Language, one unit of Algebra, and one of Geometry, and one unit of one of the sciences, Physics, Chemistry, Botany, or Zoology; and may include not more than three units from Group II. They must embrace two subjects of three units each from Group I. It is, however, strongly recommended that one or more studies be pursued throughout the four years of the high school course.

Plan B. Graduates of schools on the approved list of the North Central Association of Colleges and Secondary Schools will be admitted upon the presentation of an unqualified recommendation covering not less than fifteen units, of which at least twelve must be from Group I. Admission on this basis of recommendation may be granted also to the graduates of other especially approved schools.

Applicants for admission who intend to enter the Combined Curriculum in Letters and Medicine must offer two units of Latin. They are also strongly advised to present Trigonometry, Physics, and Chemistry. Those who enter without these subjects will ordinarily need to attend one Summer Session in addition to the regular term prescribed for the course.

Six-Year High Schools

In June, 1914, the following resolutions relative to six-year high schools and the admission of graduates from such schools were adopted by the Faculty of the College and approved by the Board of Regents. Until the requirements shall have been more explicitly formulated, they will be administered in the spirit of these resolutions.

Resolved: 1. That school authorities be encouraged to incorporate the seventh and eighth grades of the elementary school as an integral part of the high school, forming a six-year system;

2. That school authorities be recommended to organize the six-year high school system into a Junior high school of three years and a Senior high school of three years as soon as local conditions will admit;

3. That graduates of six-year high school courses be required to gain during the last three years at least eight of the fifteen units required for admission, two of which units shall be obtained during the senior year;

4. That graduates of six-year high school courses be permitted to apply for university credit *on examination.*

SUBJECTS ACCEPTED FOR ADMISSION

The subjects from which choice may be made, and the number of units which will be accepted in each subject are as follows:

Group I

English Composition, 3 units.
English Literature, 1 unit.
Greek, 2 or 3 units.
Latin, 2, 3, or 4 units.
French, 2, 3, or 4 units.
German, 2, 3, or 4 units.
Spanish, 2, 3, or 4 units.
History, 1, 2, or 3 units.
Algebra, 1, 1½, or 2 units.
Geometry, 1 or 1½ units.
Trigonometry, ½ unit.
Physics, 1 unit.
Chemistry, 1 unit.
Botany, ½ or 1 unit.
Zoology, ½ or 1 unit.
Physiology, ½ unit.
Geology, ½ unit.
Physiography, ½ or 1 unit.

Three units of science may be offered as a three-unit subject.

In order that a half unit in science may be accepted it must be supplemented by a second half unit in science. For this purpose the following groupings are suggested: (a) Botany and Zoology; (b) Zoology (or Botany) and Physiology; (c) Physiography and Geology; (d) Physiography and Botany.

Two units of Mathematics and one unit of Physics may be offered as a three-unit subject, in which case a second unit of science must be presented.

Group II

Agriculture, 1 or 2 units.
Domestic Science, 1 or 2 units.
Drawing, ½ or 1 unit.
Manual Training, 1 or 2 units.
Commercial Branches, 1 or 2 units.

Subjects from Group II will not be accepted for admission on examination.

SCOPE OF PREPARATORY WORK

The following descriptive outline indicates the amount of preparation expected in each of the subjects named:—

English Composition and Literature.—The three units in English composition and literature should cover the following subjects:—

Composition.—As preparation for this requirement, it is expected that the student will have prepared, under the direction of a competent instructor, one or more written exercises each week for at least three years. A sufficient number of these exercises should be corrected by the teacher and revised by the student to secure the desired accuracy. It is highly desirable that longer and more carefully planned papers should be a feature of the fourth year. The subjects upon which the student writes should not be drawn exclusively from literature; a considerable proportion of them should be so distributed as to give proper training in the various types of discourse, namely, description, narrative, argument, and exposition. The student's credentials should show the amount and character of the work in composition.

Rhetoric.—The student should be grounded in the essentials of rhetoric, but those principles should receive emphasis which are most likely to be of service to him in his practice in writing, such as the principles of sentential structure, paragraphing, and the outlining of the essay. The correction of stock specimens of bad English is not recommended, and will form no part of the entrance requirement.

Grammar.—The applicant should be prepared to state intelligently the essential principles of grammar and to explain the syntactical structure of any sentence encountered in his reading.

Readings and Classics.—The following books are recommended by the Joint Conference on Uniform Entrance Requirements in English:

It is expected that at least two books shall be chosen from each of the following groups:

Group I. (CLASSICS IN TRANSLATION.) The *Old Testament,* comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the *Odyssey* with the omission, if desired, of Books, I, II, III, IV, V, XV, XVI, XVIII; The *Iliad,* with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; The *Aeneid.* The *Odyssey, Iliad,* and *Aeneid* should be read in English translations of recognized literary excellence. For any selection from this group a selection from any other group may be substituted. **Group II.** (SHAKESPEARE): *Midsummer Night's Dream, Merchant of Venice, As You Like It, Twelfth Night, The Tempest, Romeo and Juliet, King John, Richard II, Richard III, Henry V, Coriolanus, Julius Caesar, Macbeth, Hamlet.* **Group III.** (PROSE FICTION): Malory's *Morte d'Arthur* (about 100 pages); Bunyan's *Pilgrim's Progress,* Part I; Swift's *Gulliver's Travels* (voyages to Lilliput and to Brobdingnag); Defoe's *Robinson Crusoe,* Part I: Goldsmith's *Vicar of Wakefield;* Frances Burney's *Evalina;* Scott's Novels, any one; Jane Austen's Novels, any one; Maria Edgeworth's *Castle Rackrent,* or *The Absentee;* Dicken's Novels, any one; Thackeray's Novels, any one; George Eliot's Novels, any one; Mrs. Gaskell's *Cranford;* Kingsley's *Westward Ho!* or *Hereward, the Wake;* Reade's *The Cloister and the Health;* Blackmore's *Lorna Doone;* Hughes's *Tom Brown's Schooldays;* Stevenson's *Treasure Island,* or *Kidnapped,* or *Master of Ballantrae;* Cooper's Novels, any one; Poe's *Selected Tales;* Hawthorne's *The House of the Seven Gables,* or *Twice Told Tales,* or *Mosses from an old Manse;* A collection of *Short Stories* by various standard writers. **Group IV.** (ESSAYS, BIOGRAPHY, ETC.): Addison and Steele's *The Sir Roger de Coverley Papers,* or Selections from the *Tatler and Spectator* (about 200 pages); Boswell's Selections from the *Life of Johnson* (about 200 pages); Franklin's *Autobiography;* Irving's Selections from the *Sketch Book* (about 200 pages), or *Life of Goldsmith;* Southey's *Life of Nelson;* Lamb's Selections from the *Essays of Elia* (about 200 pages); Lockhart's Selections from the *Life of Scott* (about 200 pages); Thackeray's Lectures on *Swift, Addison,* and *Steele* in the *English Humorists;* Macauley, any one of the following essays: *Lord Clive, Warren Hastings, Milton, Addison, Goldsmith, Frederic the Great, Madame d'Arblay;* Trevelyan's Selections from the *Life of Macaulay* (about 200 pages); Ruskin's *Sesame and Lilies,* or *Selections* (about 150 pages); Dana's *Two Years Before the Mast;* Burke's *Speech on Conciliation with America;* Washington's *Farewell Address;* Webster's *First Bunker Hill Oration;* Macaulay's *Speech on Copyright;* Lincoln's *Selections,* including at least the two inaugurals, the Speeches at Cooper Union, in Independence Hall, and at Gettysburg, the Last Public Address, the Letter to Horace Greeley, together with a brief memoir or estimate of Lincoln; Parkman's *The Oregon Trail;* Thoreau's *Walden;* Lowell's *Selected Essays* (about 150 pages); Holmes's *The Autocrat of the Breakfast Table;* Stevenson's *An Inland Voyage* and *Travels with a Donkey;* Huxley's *Autobiography* and selections from *Lay Sermons, including* the address on *Improving Natural Knowledge, A Liberal Education,* and *A Piece of Chalk;* A collection of *Essays* by Bacon, Lamb, DeQuincey, Hazlitt, Emerson, and later writers; A collection of *Letters* by various standard writers; Carlyle's *Essay on Burns,* with a selection from Burns's *Poems;* Macaulay's *Life of Johnson;* Emerson's *Essay on Manners.* **Group V.** (POETRY): Milton's *L'Allegro, Il Penseroso,* and either *Comus* or *Lycidas:* Palgrave's *Golden Treasury* (First Series): *Books II and III,* with special attention to Dryden, Collins, Gray, Cowper, and Burns; Palgrave's *Golden Treasury* (First Series). *Book IV,* with special attention to Wordsworth, Keats, and Shelley; Goldsmith's *The Traveller* and *the Deserted Village;* Pope's *The Rape of the Lock;* A Collection of English and Scottish *Ballads,* as, for example, some *Robin Hood* ballads, *The Battle of Otterburn, King Estmere, Young Beichan, Bewick and Grahame, Sir Patrick Spens,* and a selection from later Ballads; Coleridge's *The Ancient Mariner, Christabel,* and *Kubla Khan;* Byron's *Childe Harold, Canto III or IV,* and *The Prisoner of Chillon;* Scott's *The Lady of the Lake, or Marmion;* Macaulay's *The Lays of Ancient Rome, The Battle of Naseby, Lancelot and The Armada, Ivry;* Tennyson's *The Princess,* or *Gareth and Lynette, Elaine, Holy Grail, Coming of Arthur,* and *Passing of Arthur,* Browning's *Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa—Down in the City, The Italian in England, The Patriot, The Pied Piper, "De Gustibus"—, Instans Tyrannus;* Arnold's *Sohrab and Rustum,* and *The Forsaken Merman;* Selections from *American Poetry,* with special attention to Poe, Lowell, Longfellow, and Whittier.

It is expected that the applicant will have read these books appreciatively and will have made himself familiar with the subject-matter and the form of each work. The reading should be connected, in reasonable measure, with the lives and character of the authors read and with the history of their times.

Although the books mentioned above are recommended as preparation for this part of the requirement, they are not prescribed. Books of equal merit covering a similar range of literary types will be accepted as equivalents.

It is recommended that in connection with the reading of classics, the memorizing of notable passages, in both prose and poetry, should form a regular exercise throughout the whole preparatory period. This is all-important for the development of a correct taste in language and literature.

Applicants who present themselves for examination will be asked to write two essays of not less than two hundred words each, one upon a subject drawn from his reading, and the other upon the subject drawn from experience or observation. The purpose of this second paper will be to enable the candidate to show that he has read, understood, and appreciated a sufficient amount of literature; but he may also be asked questions which he can answer only by applying what he has learned to passages of literature, which he has not seen before. The language of these essays must be grammatical and clear. The spelling, punctuation, and capitalizing must be correct. The applicant must show ability to discriminate in the use of words and to construct well organized sentences and paragraphs. A topical outline should accompany each essay. The applicant should also be prepared to answer questions upon the fundamental principles of grammar and rhetoric.

History of English Literature.—The applicant who offers four units in English composition and literature should have pursued the study throughout the four years of the high school course. In addition to the foregoing requirement his preparation should include a systematic study of the outlines of English literary history. Due emphasis should be laid upon the division of the subject into periods; and the leading characteristics of each period should be studied and, so far as possible, illustrated by the reading of representative authors. Any of the current manuals of English literature may serve as the basis of this part of the work, which should occupy the third or fourth year of the course. The historical study would, however, be associated as closely as possible with the reading of classics.

Greek.—The two units in Greek should be made up of grammar, prose composition, and reading, as follows:

Grammar.—Goodwin's or Hadley's. The inflections must be thoroughly mastered.

Prose Composition.—Jones's *Exercises,* with special reference to the writing of Greek with the accents, and to the general principles of syntax. Woodruff's *Greek Prose Composition* is taken as an equivalent.

Reading.—Three books of Xenophon's *Anabasis* and two books of Homer.

The so-called continental sound of the vowels and diphthongs, and pronunciation according to the written accents are preferred.

Latin.—An applicant offering two units in Latin must have completed the beginners' Latin book, and must have read not less in amount than Caesar, *Gallic War, I-IV,* which may be selected from Caesar, *Gallic War* and *Civil War,* and Nepos, *Lives;* and he must, further, have devoted the equivalent of one recitation period a week for one year to the writing of exercises in Latin prose composition.

N. B.—This preparation is sufficient to enable the student to enter Latin A or B in the University.

An applicant offering three units in Latin must have completed the foregoing requirements for two units. He must, in addition, have read not less in amount than Cicero, *the orations against Catiline, for the Manilian Law,* and *for Archias,* or Virgil, *Aeneid, I-VI.* which may be selected from Cicero, *orations, letters,* and *De Senectute,* and Sallust, *Catiline* and *Jugurthine War,* or Virgil, *Bucolics, Georgics,* and *Aeneid,* and Ovid, *Metamorphoses, Fasti,* and *Tristia:* and he must, further, be prepared to meet the requirements in Latin prose composition described below for four units.

The Latin reading required of applicants offering four units* of Latin, without regard to the prescription of particular authors and works, must not be less in amount than Caesar, *Gallic War, I-V,* Cicero, *the orations against Catiline, for the Manilian Law,* and *for Archias,* Virgil, *Aeneid, I-VI.* This amount of reading must be selected from the following authors and works: Caesar, *Gallic War* and *Civil War,* and Nepos, *Lives,* Cicero, *orations, letters,* and *De Senectute,* and Sallust, *Catiline* and *Jugurthine War,* Virgil, *Bucolics, Georgics,* and *Aeneid,* and Ovid, *Metamorphoses, Fasti,* and *Tristia.* The applicant must, further, have devoted the equivalent of one recitation period a week for two years to the writing of exercises in Latin prose composition.

The following is the scope of the examination of applicants who wish to offer four units in Latin as specified above, but who are not entitled to enter on diploma. Such applicants will be examined in translation at sight of both prose and verse. The vocabulary, construction, and range of ideas of the passages set will be suited to the preparation secured by the reading indicated above. Applicants will be examined also upon the following prescribed reading: Cicero, *orations for the Manilian Law* and *for Archias,* and Virgil, *Aeneid, I, II,* and either *IV or VI,* at the option of the applicant, with questions on subject matter, literary and historical allusions, and prosody. Every paper in which passages from the prescribed reading are set for translation will contain also one or more passages for translation at sight; and applicants must deal satisfactorily with both these parts of the paper, or they will not be given credit for either part. The examinations in grammar and composition will demand thorough knowledge of all regular inflections, all common irregular forms, and the ordinary syntax and vocabulary of the prose authors read in school, with ability to use this knowledge in writing simple Latin prose. The words, constructions, and range of ideas called for in the examinations in composition will be such as are common in the reading of the year, or years, covered by the particular examination.

French.—The applicant who offers two units in French will be expected to pronounce French intelligently and with some fluency, to understand French when spoken in simple phrases and about familiar subjects, to read ordinary prose easily and accurately, and to write correctly in French simple sentences based on texts studied. This ability demands a firm grasp of the elements of grammar (such as the conjugation of the verb, both regular and irregular, the use of auxiliaries, the forms of the pronoun, the agreement of adjectives and particles, the main uses of the articles, and the order of words in the sentence), and such a familiarity with the structure of the sentence and common terms of expression and such command of vocabulary as may be given by the careful, well directed reading of three or four hundred pages of easy prose.

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* According to the recommendations of the Commission of Fifteen on College Entrance Requirements in Latin.

The applicant who offers three units in French should be able to read ordinary prose rapidly at sight, with clear understanding of the distinctions of tense and mode and all the common points of syntax, to reproduce in simple but connected French the substance of a narrative or dramatic text, and to follow ordinary explanations and commentaries made orally in French. In acquiring this ability accent should be laid on the rapid understanding of the French phrase, whether it be addressed to the eye or the ear. Much should be read, spoken, and dictated. At least six hundred pages of prose should be read, and in the end it should not be too easy.

The applicant who offers four units in French should be able to read at sight any French not offering very unusual difficulties of vocabulary or syntax, to translate into French a passage of simple English, and to carry on a conversation in French upon a familiar subject. He should have had, in addition to what is required for three units, at least one thousand pages of French chosen from standard authors, and he should be able to answer questions on the content and meaning of the works read as well as upon the language in which they are written.

Spanish.—The applicant who offers two units in Spanish must be able to pronounce Spanish correctly, to take down easy dictation in Spanish, to translate intelligently easy Spanish prose, and to translate simple English sentences into Spanish sufficiently well to show a knewledge of the essentials of Spanish inflection and syntax. He should be able to understand and answer simple questions in Spanish.

The applicant who offers three units in Spanish should be able to read ordinary prose rapidly at sight, with clear understanding of the distinctions of tense and mode and all the common points of syntax, to give in simple connected Spanish the substance of a narrative, and to follow ordinary explanations and commentaries made orally in Spanish. He should have read at least five hundred pages of modern prose.

The applicant who offers four units in Spanish should be able to read at sight any Spanish not offering unusual difficulties of vocabulary or syntax, to translate into Spanish a passage of simple English, and to carry on a conversation in Spanish upon a familiar subject. He should have read at least as much as the applicant who offers three units, and should have a distinctly firmer practical grasp of the language.

German.*—The applicant who offers two units in German should be able to pronounce German correctly and should be thoroughly familiar with the everyday facts of the grammar. He should have read about 300-350 pages of standard modern prose and should be able to take part in a simple conversation in German on topics drawn from the works read. He should also be able to translate easy English prose into German.

The applicant who offers three units in German should, in addition to the work described above, be prepared as follows: He should have read two classics selected from the works of Lessing, Goethe, and Schiller, and about 250 pages of standard prose fiction and history. He should have a good knowledge of German syntax and should be able to write a short essay on some subject taken from the works read. He should also be able to translate ordinary English into German and to express himself in German grammatically and with ease on topics connected with his reading.

The four units in German include the foregoing requirements and additional preparation as follows: The reading of five standard dramas (exclusive of those read in the third year) selected from the works of Goethe, Schiller, Lessing, Heinrich v. Kleist, and Grillparzer; a thorough command of German grammar, and the ability to speak and write German with considerable ease and correctness. The applicant should have written several longer essays on the works read.

History.—The applicant who offers one, two, or three units in history may select from the following list:

Ancient history to the year 800 A. D., one unit.
Mediæval and modern history, one unit.
English history, one unit.
United States history and government, one unit.

A year's work in general history, with the use of such a book as Meyer's *General History*, will still be accepted as one unit, though it is believed that better results will be obtained if a year is given to ancient history down to the fall of the Roman Empire (or, preferably, to the year 800 A. D.), and a year to mediæval and modern history.

The United States history is not the elementary work given in the lower grades, but an advanced course given in the latter years of the high school.

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* A fuller statement of the requirements in German may be found in the "Report of the Committee of the German Section of the Michigan Schoolmasters' Club on a Uniform High School Course in German." Copies of the report may be obtained by applying to the professor of German.

Mathematics.—The three units in mathematics include algebra through quadratics, and geometry, both plane and solid (including spherical). Beman and Smith's *Elements of Algebra,* and the same authors' *New Plane and Solid Geometry* are mentioned to indicate the scope and character of the work required.

The applicant who presents two units in mathematics should have covered algebra through quadratics with one unknown and plane geometry. (See Beman and Smith's *New Plane Geometry*).

Trigonometry.—The one-half unit in trigonometry should cover the work in plane trigonometry as given in Hall and Frink's *Trigonometry* or an equivalent in other authors.

Physics.—The unit in physics includes an amount represented by Carhart and Chute's *High School Physics.* The instruction in the class room should be supplemented by work in the physical laboratory to the extent of at least one period a week throughout the school year.

Chemistry.—The unit in chemistry covers the information which should be acquired in one year by the study of Brownlee's, Hessler and Smith's, Linebarger's, McPherson and Henderson's, Newell's, Remsen's, or other similar text. The study of the text should be accompanied by laboratory work done by the student. A thorough working knowledge of a few fundamental principles is more to be desired than a superficial knowledge covering a wider range.

Botany. — The unit required of those who offer botany for admission, is expected to include as much as a competent teacher, trained in laboratory methods, can accomplish with his classes in a year. No attempt is here made to indicate the exact extent of the ground to be covered, for the teacher should have large liberty in selecting material and topics as occasion requires; but it is recommended that one-half year be given to the form, structure, and habits of flowering plants, while the other half-year may be given to the natural groups of plants, physiology, and the adaptation of form and structure to environment.

The following text-books are recommended as offering numerous and helpful suggestions: Atkinson's *Elementary Botany;* Bailey's *Botany;* Barnes's *Plant Life;* Bergen's *Foundations of Botany;* Coulter's *Plant Relations and Plant Structures;* Spaulding's *Introduction to Botany;* Stevens's *Introduction to Botany.* Ganong's *Teaching Botanist* is one of the most useful books for the teacher.

Zoology.—The unit or half unit in zoology must include laboratory and field work as well as class room exercises. Wherever possible, two class room periods should be available for each field or laboratory exercise. Two or three such exercises with two or three recitations per week make a suitable distribution of time.

The content of the course should be determined in some measure by local conditions, such as size of class, accessibility of suitable conditions for field work, and training and interests of the teacher. Study of types is essential, but these should be selected largely from the local fauna. Such study need not take up the details of internal structure nor require dissection by the student. As far as possible the course should deal with living animals and should emphasize the functions, activities, and relations to environment of the type selected rather than their morphology. But the study of types should serve merely to introduce the student to the local groups to which they belong. The outlines of the classification of these groups, recognition in the field of their common local representatives, their habits, life histories, and ecology should form the larger part of the course. Emphasis should be placed on facts and principles that have a peculiar local interest and on the economic phases of the subject. In the small towns field work and topics related to agriculture may be emphasized. In the cities the work may have to be conducted largely on types and in the laboratory, but the types of economic importance should then be selected and the zoological aspects of civic biology given special attention.

The following text-books are suggested: Needham's *Elementary Lessons in Zoology;* Davenport's *Elements of Zoology;* Jordan and Kellogg's *Animal Life;* Linville and Kelly's *Text-Book in General Zoology;* Hegner's *Practical Zoology;* Hunter's *Civic Biology;* Peabody and Hunt's *Elementary Biology;* Kellogg's *Animals and Man.*

Physiography.—The applicant who offers one-half unit in physiography must have studied *in class* one of the following books for a half year: Dryer's *Lessons in Physical Geography;* Gilbert and Brigham's *Introduction to Physical Geography;* Davis's *Elementary Physical Geography;* Tarr's *New Physical Geography,* or an equivalent. In this connection field excursions are earnestly recommended.

Meteorology will not be included in the examination.

The applicant who offers one unit in Physiography should have studied the subject in high school for at least one year under a competent instructor, and with the aid of field excursions and laboratory practice.

The ability to read a togopraphic map is essential in physiographic study; teachers will find the topographic maps issued by the United States Geological Survey an important aid.

Physiology. — One-half unit. The anatomy and physiology of the human body, and the essentials of hygiene. Recitations and laboratory work, with the aid of charts and models, as treated in the standard texts. The course should be preceded by at least a half year of zoology or a course in general biology.

Agriculture. — One or two units. Recitations and laboratory work in the various divisions of agriculture, including farm crops and horticulture, animal and dairy husbandry, soil physics, soil fertility, and farm mechanics. The study should be preceded by a course in botany.

Domestic Science.—One or two units. Recitations and laboratory work in the selection, preparation, and chemistry of foods; the properties and selection of fabrics, and the designing and making of clothing; and the systematic supervision and performance of the various operations of housekeeping.

Drawing. — One-half or one unit of work along one or more of the following lines, a unit meaning the equivalent of at least 360 periods, not less than forty-five minutes each:

In Freehand Drawing, the correct representation of geometrical and simple natural or decorative forms;

In Mechanical Drawing, exercises in the use of instruments, the accurate geometrical construction, orthographic projections, and working drawings;

In design, the principles of design with simple applications.

Manual Training.—Students may present one or two units, a unit meaning of the equivalent of at least 360 periods, not less than forty-five minutes each. The work accepted may be:

1. Bench work, wood turning, cabinet making, and pattern making in the wood shop.
2. Forging, chipping and filing, sheet-metal construction, tool making, turning and spinning in metals.

Commercial Branches. — Not more than a total of two units will be accepted in these subjects, to be selected from the following list.

Advanced Arithmetic.—One-half unit. Credit will be allowed for arithmetic only if taken after at least one unit of algebra.

Double Entry Bookkeeping.—One-half or one unit. If credit to the extent of a full unit is sought, the student should devote at least ten periods of not less than forty-five minutes each in class each week for one academic year. The applicant should have a working knowledge of single and double entry bookkeeping in the usual lines of business. He should understand the use of the various books such as the journal, cash book, sales book, invoice book, ledger, and special column journals and cash books. He should know how to prepare profit and loss statements and balance sheets, and to explain the meaning of the items involved in both kinds of statements.

Commercial Geography.—One-half unit. The amount and character of work accepted in this subject is indicated by the scope of the best text-books in the subject.

Industrial History.—One-half or one unit. The scope of this work is indicated by such texts as Cheyney or Cunningham in English industrial history, or Wright, Coman, or Bogart in American history.

Elementary Economics.—One-half unit. The applicant should have a knowledge of the leading facts and principles in Economics, including such subjects as division of labor, the factors of production, the law of diminishing returns, demand and supply, value and prices, and international trade. One of the better elementary texts in use will serve as a basis. This should be supplemented with discussions and problems.

ADMISSION ON EXAMINATION

Applicants for admission who are not entitled to enter on diploma (See page 104) must take the entrance examinations in the entire fifteen units. They should register with the Registrar, at his office in University Hall, the day before examination begins, or with the officer in charge of the examinations.

The applicant may divide the examination into two parts, taking one part either a year or a semester before the date of his admission and the second part at the time of admission. But if he fail to secure the requisite number of units within the specified time he forfeits all credits for the subjects he may have passed.

The examination in the several subjects will be in writing and will be held in Tappan Hall in accordance with the schedules given below. Applicants presenting themselves too late for the scheduled examinations are required to pay an examination fee of five dollars.

This College conducts the examinations for admission to all colleges of the University. Examinations in those subjects accepted by other colleges, but not by this, will be provided for on application to the Registrar.

SCHEDULE OF EXAMINATIONS FOR ADMISSION, SEPTEMBER, 1917

	Monday Sept. 24	Tuesday Sept. 25	Wednesday Sept. 26	Thursday Sept. 27	Friday Sept. 28
8-11		Geometry	Algebra	History	English Composition
1-3:30	English Literature	Physics	German Greek	French Spanish	Botany
3:30-6	Zoology	Physiography Geology	Latin Physiology	Trigonometry	Chemistry Astronomy

SCHEDULE OF EXAMINATIONS FOR ADMISSION, FEBRUARY, 1918

	Thursday, Feb. 7	**Friday, Feb. 8**	**Saturday, Feb. 9**
8-10	**English Composition**	**Algebra** **Trigonometry**	**Geometry**
10-12	**Botany**	**Physiography** **Geology**	**Chemistry**
2-4	**History**	**Physics**	**Latin** **Greek**
4-6	**Physiology**	**French** **German** **Spanish**	**English Literature** **Zoology**

All examinations are held in Room 203, Tappan Hall.

ACCREDITED SCHOOLS

The privilege of sending pupils for admission on diploma is limited to schools that have been approved by the Faculty. On request of the proper authorities, the Faculty sends an officer of the University to visit a school and report upon its condition. If satisfied from the report of this officer that the school is taught by competent instructors, and is furnishing a good preparation to meet the requirements for admission, described on pages 103 to 106, then the Faculty places the school on the approved list for a period not exceeding three years (inclusive of the year of visitation); reserving, however, the right to require another inspection, if within the period specified in each case, important changes affecting the course of study in the school, or the efficiency of the instruction, seem to make an examination necessary. Requests for inspection should be addressed to the High School Inspector, University of Michigan, Ann Arbor.

The list of schools in Michigan accredited to the University for the year 1915-1916 is given below. In the Announcement of the College of Literature, Science, and the Arts issued next summer will appear the list for 1916-1917.

*Adrian, *a*
*Albion
Allegan, *a*
*Alma
Almont
*Alpena
*Ann Arbor
" St. Thomas' School
Armada
Athens

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* Schools marked by the asterisk are also accredited by the North Central Association of Colleges and Secondary Schools.

a Schools marked thus offer work in Agriculture that is accepted for admission at the University.

Bad Axe, a
Bangor, a
Baraga, a
*Battle Creek
*Bay City, East Side, a
* " West Side
" St. Mary's School
" Holy Rosary Academy
" St. James Academy
Bear Lake
Belding
Bellaire
Bellevue
*Benton Harbor
Benzonia
Benzonia Academy
Berrien Springs
" " Emmanuel College
*Bessemer
*Big Rapids
* " " Ferris Institute
*Birmingham, a
Blissfield, a
*Boyne City
Bronson
Brooklyn
Brown City
Buchanan
*Cadillac
*Calumet
Capac
Caro
Carson City
Cass City
Cassopolis
Cedar Springs
Central Lake
Champion
*Charlevoix
*Charlotte, a
*Cheboygan
*Chelsea
Chesaning
Clare
Clinton
*Coldwater
Coloma
Colon
Constantine, a
Coopersville
Corunna
*Crosswell, a
*Crystal Falls, a
Decatur
Deckerville
*Detroit, Cass
* " Central
* " Eastern
* " Liggett
* " McMillan
* " Northwestern
* " Western
" Univ. of Detroit Prep.
* " New University School
Dexter

*Dollar Bay
*Dowagiac, a
Dryden
Dundee
Durand
East Jordan, a
East Tawas
*Eaton Rapids
*Elk Rapids
Elsie
*Escanaba, a
*Evart, a
Fenton
*Flint
Flushing, a
Fowlerville
Frankfort, a
*Fremont, a
Galesburg
Gaylord
*Gladstone
Gladwin
*Grand Haven
" " Akeley Hall
Gobleville
*Grand Ledge
*Grand Rapids, Central, a
* " " Union
* " " John Calvin Col. Prep.
" " Sacred Heart Academy
" " Catholic H. School for Girls
" " Catholic H. School for Boys
Grandville
Grayling
Greenland
*Greenville, a
Grosse Isle
Gwinn
*Hancock
Harbor Beach
*Harbor Springs
*Hart, a
Hartford
*Hastings, a
*Highland Park
*Hillsdale, a
*Holland
Holly
Homer
Hopkins
*Houghton
Howard City
*Howell
*Hudson, a
Imlay City
*Ionia
*Iron Mountain, a
Iron River
*Ironwood
" St. Ambrose
*Ishpeming, a

*Ithaca
*Jackson
" St. Mary's School
Jonesville
*Kalamazoo
" Normal Preparatory
" Nazareth Academy
Kalkaska
Kent City
L'Anse
Lake City
*Lake Linden
Lake Odessa
*Lansing
" St. Mary's
*Lapeer
Lawrence
Lawton, *a*
Leslie
Linden
*Lowell
*Ludington, *a*
" St. Simon's School
Mancelona
Manchester
*Manistee, *a*
*Manistique
Manton, *a*
Marcellus
Marine City
Marion
Marlette
*Marquette
*Marshall, *a*
*Mason
Mayville
Mendon
*Menominee
*Midland
Milan
Milford
Millington
*Monroe, *a*
" St. Mary's Academy
Morenci
Montgomery
*Mt. Clemens
" " St. Peter's
*Mt. Pleasant
" " Normal Preparatory
" " Sacred Heart Acad.
*Muskegon, *a*
" St. Mary's
*Munising
Nashville
*Negaunee
Newaygo
New Baltimore
Newberry
Niles
North Branch
Northville
*Norway
Olivet
Onaway
*Ontonagon, *a*
Orion
*Otsego, *a*
Ovid
*Owosso
Oxford
*Painesdale
*Paw Paw
Pellston
Pentwater
*Petoskey
Pinckney
Plainwell, *a*
*Plymouth
*Pontiac
*Port Huron
*Portland
Quincy
Rapid River
Reading
*Reed City
Republic
Richmond
*River Rouge
Rochester
Rockford
Rockland
Romeo
Royal Oak
*Saginaw, East Side
* " West Side
" St. Mary's School
" SS. Peter & Paul's Sch.
St. Charles
St. Clair
St. Ignace
*St. Johns, *a*
*St. Joseph
*St. Louis, *a*
Saline
Sandusky
*Sault Ste. Marie
Saranac
Schoolcraft
Scottville
Sebewaing
*Shelby
Shephard
*South Grand Rapids
*South Haven, *a*
South Lyon
Sparta
Spring Arbor Academy
Stambaugh
Standish
Stanton
Stevenson Twp.
Stockbridge
*Sturgis
Tecumseh
Tekonsha
Three Oaks
*Three Rivers
*Traverse City, *a*
Trenton

Union City
Vassar
Vermontville
Vicksburg, _a_
Vulcan
*Wakefield
Watervliet, _a_
Wayne
West Branch
*Williamston
White Pigeon
Whitehall
Wolverine
*Wyandotte
Yale
*Ypsilanti
" Normal College, Prep.
*Zeeland

ADMISSION ON CERTIFICATE

Only those applicants will be admitted without examination who are graduates of schools accredited to this University, and who present a recommendation, signed by the principal of the school, certifying that they have satisfactorily completed all the work required for admission. The recommendation must be made on a blank form furnished by the University.

It is expected that the principal will recommend not every graduate, but only those whose ability, application, and scholarship are of such superior grade that the school is willing to stand sponsor for their success at the University.

The principals of approved schools are urged to send directly to the Registrar, upon the close of the school year, the recommendation of each graduate intending to enter this College at the beginning of the ensuing year. If on inspection, the recommendation is found satisfactory, the Registrar will forward to the applicant a certificate entitling him to admission without examination. The address of the applicant is to be entered on this blank.

CONDITIONAL ADMISSION

No applicant will be admitted who presents less than fifteen units.

An applicant for admission either on examination or diploma, who present fifteen units from the lists on pages 105 and 106, but who is deficient in not more than two units there specified as mandatory, may be admitted conditionally; but any condition thus incurred must be removed during the first year of residence. No student who has an admission condition outstanding at the beginning of his second year of residence will be allowed to enter his classes until such condition is removed.

ADMISSION TO ADVANCED STANDING

1. A student who brings a certificate of standing from an approved college or university, showing that he has satisfactorily completed at least one year of the curriculum of the institution from which he comes, may be admitted without examination to equal stand-

ing in this College. A graduate of one of the stronger courses of an approved normal school, who brings an official certificate explicitly describing the extent and character of his work, may be given, without examination, such advanced standing as is justified by the course he has completed.

Advanced credit for work taken by correspondence is granted only upon examination.

The certificates above referred to must be presented to the Dean of the College as early as the fifteenth of October (or, if the student enter at the beginning of the second semester, as early as the first of March).

2. No advanced credit is granted for subjects studied in the high school, unless the student has taken a post graduate high school course of at least one semester. Such students may apply for advanced standing by presenting to the Registrar on October 18 (or, if they enter at the beginning of the second semester, on March 1) a statement showing the amount of work done in the subjects in which credit is asked. The Registrar will thereupon furnish a blank form for presentation to the professors in charge of the several subjects designated in the blank, who will determine the amount of credit to which the applicant is entitled in accordance with one of the following conditions:

Either the applicant must pass a satisfactory examination in the work presented; or the applicant must, during his first year of residence in the University, creditably complete in the department of study concerned a course presupposing a satisfactory knowledge of the work for which credit is asked.

All advanced credit shall be subject to revision at the end of the first year of residence.

Credits must be secured and returned to the Registrar as early as the first of November (or, if the student enter at the beginning of the second semester, as early as the fifteenth of March). An account once closed cannot be reopened without special permission of the Dean or Registrar.

ADMISSION OF STUDENTS NOT CANDIDATES FOR A DEGREE

Persons who wish to pursue studies in the College without becoming candidates for a degree may be admitted under the following conditions:

A. Persons over twenty-one and under twenty-five years of age, not provided for in Section B, may be admitted if they present satisfactory credentials, showing their preparation for academic work, and pass entrance examination in nine units chosen from those accepted for entrance (see page 105.) Certificates will not be accepted in place of these examinations. The nine units must include three units in English and one unit in Algebra. Before the beginning of the third year of residence, such students must make up the remaining units required for admission to regular standing.

B. Persons over twenty-one years of age who have taught two years in schools of grammar or high school grade, and all persons over twenty-five years of age may be admitted, provided they pass an examination in English, and show that they are qualified to pursue profitably the studied that they may desire to take up. In this examination in English, applicants will be asked to write brief essays on subjects that will be assigned, and to answer questions on the rudiments of English Grammar. The examination will be held in Room 203, Tappan Hall, at 8 A. M. Friday, September 28.

The Registrar's office will be open for the enrollment of applicants for admission on and after Monday, September 24, from 9 to 11, and 2 to 5.

Should a student thus admitted subsequently become a candidate for graduation, he must pass all the examinations for admission required of such candidate, at least one year before the time when he proposes to graduate.

Such students who wish credit for studies pursued before admission are referred to the rules relating to advanced standing given above.

REQUIREMENTS FOR GRADUATION

Bachelor of Arts

The degree of Bachelor of Arts is conferred upon students who have earned one hundred twenty hours of credit (together with one hundred twenty points*) in accordance with the following requirements:

1. The credit must include Courses 1 and 2 in Rhetoric, which must be taken in the first year of residence.

2. In addition to the required courses in Rhetoric, the credit must include at least twelve hours from each of the following three groups, to be taken by the end of the third year of residence. (In the case of students who enter with advanced credit ,or in other exceptional cases, the requirement that the group electives must be taken before the end of the third year may be waived upon application to the Advisory Committee, through the Dean).

Group I: Ancient Languages and Literatures, Modern Languages and Literatures, Rhetoric (other than Courses 1 and 2).

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* For the definitions and significance of grades and points see rule 4, page 127.

Group II: Mathematics, Astronomy, Physics, Chemistry, Mineralogy, Geology, Zoology, Botany, Psychology.

Group III: History, Political Economy and Sociology, Political Science, Philosophy, Education.

3. To complete the one hundred twenty hours required for graduation, the student may select from the work offered in the announcement of the College of Literature, Science, and the Arts, such courses as he is qualified to pursue, subject only to the rules which follow:

a. Not more than eighty hours of elective studies may be taken in any one of the three groups specified above.

b. Not more than forty hours may be elected in any one department of study (as, for example, Greek, Philosophy, Mathematics, History, etc.). In the department of Economics, however, a maximum of sixty hours may be elected; provided that not more than forty hours may be taken in any one of the subdivisions, Political Economy, Sociology, and Business Administration.

c. At least two-thirds of the work taken in residence beyond the Sophomore year, must be in courses not open to first year students.

d. Every student is required, before December 20 of his senior year, to obtain from the Registrar an official statement of verification of his record.

Bachelor of Science

A student who has otherwise completed the requirements for the degree of Bachelor of Arts and has earned at least sixty of these one hundred twenty hours in mathematics and the physical and biological sciences may, at his option, receive the degree of Bachelor of Science, instead of Bachelor of Arts.

Bachelor of Science in Chemistry

The degree of Bachelor of Science in Chemistry is conferred upon students who have earned one hundred twenty hours of credit (together with one hundred twenty points) including the prescribed program of studies to be found on page 141.

Bachelor of Science in Forestry

The degree of Bachelor of Science in Forestry is conferred upon students who have earned one hundred twenty hours of credit (together with one hundred twenty points) including the prescribed program of studies given on page 146.

Residence

No candidate will be recommended for the bachelor's degree who has been in residence at this University, registered solely in the College of Literature, Science, and the Arts, less than one academic year and who has earned while in residence here less than thirty hours of credit selected from courses offered in this College. The senior year, or its equivalent, must be spent in residence in this College.

For a matriculated student regularly enrolled in this College a Summer Session will be considered as equivalent to one-half a semester's residence.

Degrees with Distinction

Special distinction, to be recorded on the diploma, may be earned under the following conditions:

a. Students who have at graduation a total number of points greater by 165 than the number of hours earned in residence shall be graduated "with high distinction." In other words, in order to gain high distinction, the student must earn at least 45 hours of A grade, while the remainder of his work done in residence must average B grade.

b. Students who have at graduation a total number of points greater by 135 than the number of hours earned in residence shall be graduated "with distinction." In other words, in order to gain distinction, the student must earn at least 15 hours of A grade, while the remainder of his work done in residence must average B grade.

c. Students who have at graduation a total number of points greater by 120 than the number of hours earned in residence, and who, because of consistently good work in a subject, receive the recommendation of the department, may, by vote of the Faculty, be graduated with special mention in that subject.

Attendance at Commencement

Only those who are present in person may receive their diplomas on Commencement Day. Others who have satisfied all the requirements for graduation, including the payment of the graduation fee, will receive their degrees at a subsequent meeting of the Board of Regents.

Graduation Fee

The graduation fee of ten dollars must be paid to the Treasurer of the University at least twenty-five days prior to the date of graduation. The same rule applies to the fee for the Teacher's Diploma; candidates for the Teacher's Diploma must have been enrolled with the Head of the department of Education for a like period.

REGISTRATION

A. All undergraduate students in the College of Literature, Science, and the Arts are required, at the beginning of each year of residence, to enroll with the Registrar, to pay their fees to the Treasurer, and to file with the officer hereafter to be designated an election blank properly filled out, showing the courses they expect to pursue during the semester. These three things shall be considered as constituting Registration in this College.

All students entering this College for the first time must present their credentials to the Dean or Registrar and secure from him an admission card before enrolling with the Registrar.

B. Students may register at any time on or after Tuesday, September 25, up to and including the second day of the semester. After the second day, students may register only with permission of the Dean, and upon payment of an additional fee of $5.00. This fee may, in special cases of enforced absence or illness, be remitted upon application to the Dean.

Freshmen are required to register not later than Saturday, September 29, in order that their classification may be completed before classes begin.

C. The election blanks of all first year students and of all students not candidates for a degree must be presented in person to the Committee on Elections. The election blanks of all other students must be presented in person to the Registrar. No credit is given for courses not properly elected. No student is allowed to elect merely a part of a course.

1. *First-Year Elections.*—Rhetoric 1 and 2 must be taken the first year of residence, unless for exceptional reasons a postponement is allowed by the Committee on Elections. In addition to the work in Rhetoric, students entering with less than thirty hours of advanced credit are expected to elect each semester, three of the following courses, making a total of fifteen hours a week:

Greek, 1, 2 (or A, B).
Latin, 1 or 1*a*, 2 (or A, B).
French, 1, 2 (or 3, 4).
Spanish, 1, 2 (or 3, 4).
German, 1, 2 (or 3, 4).
History, 1, 2 (or 1*a*, 2*a*, or 1*b*, 2*b*).
Mathematics, 1, 2 (or 1E, 2E).
Physics, 1, 2.
Chemistry, 1 and 1*a*, 2 and 2*a*.
Botany, 1, or 1*a*.
Zoology, 1, or 1*a*.
Geology, 25*a*, 25*b*.

If a student has credit either toward admission or toward graduation, for first year foreign language, he may elect the work of the second year. If his credit includes second year language, he may elect the work of the third year.

Course 1 in Physics must be preceded or accompanied by a course in Plane Trigonometry.

Botany 1 and Zoology 1 should be elected in consecutive semesters, but may be taken in either order.

Courses, the equivalents of which have been offered for entrance, can not be again elected with credit.

In no case may courses not on this list be elected by first-year students without the permission of the Committee on Elections. The committee may be consulted between 9 a. m. and 5 p. m. daily, from Tuesday, September 25 to Monday, October 1, in the Auditorium of University Hall, and at other hours to be announced.

2. *Number of Hours Allowed.*—In accordance with the provisions of the foregoing rule, first-year students are required to elect fifteen hours a week. For all except first-year students the maximum number of hours a week that may be elected without special permission is sixteen, the minimum, twelve. The time necessary to earn the degree may also be materially shortened by attendance upon the Summer Session. (See chapter on Summer Session.)

On special request students of superior scholarship may be granted additional hours, but in all cases such requests must be made each semester in writing on a blank form provided by the Registrar, and must be filed with the regular election blank, on which the elections should be made as if the request had been granted. No student will be granted permission to elect extra hours who is in his first semester of residence, or who in the preceding semester received a grade of D, or earned less than one and one-half times as many points as hours.

All requests for permission to take less than the minimum number of hours must be made in writing, stating the proposed election and the reasons therefor, and must be filed with the regular election blank, on which the election should be made as if the request had been granted.

D. Every student is required to file with the same officers, on Thursday or Friday of the second week preceding the final examinations of the first semester of each year, an election blank showing the studies he expects to pursue during the second semester. Election blanks presented after this date will be accepted only upon payment of $1.00. This fee may, in exceptional cases, be remitted upon application to the Dean.

E. Necessary changes in elections may be made during the first week of the semester, by filing with the Registrar a revised election blank on Thursday or Friday of that week. In the case of first-year students and of all special students such changes can be made only after consultation with the Committee on Elections.

F. After the first week changes may be made only by permission of the Administrative Board and upon the payment of a fee of $1.00. This fee may be remitted only by the Administrative Board. Such requests for permission to take up or drop studies must be made in writing on specially provided blank forms and in accordance with the rules printed thereon. Membership in the class does not cease until permission to drop the course has been granted by the Administrative Board (as represented by the Dean or the Registrar) and notice sent to the instructor. Authority to grant permission to drop, take up, or change courses has not been delegated to the instructors.

Consultation Hours. — Throughout the period of registration, September 26 to October 3, 1917, representatives of all the different departments will keep consultation hours to advise upper-class students, both new and old, regarding the work of the department. Further announcement of the time (usually 10 to 12 daily) and place will be found at the head of the description of courses, and also on a separate circular to be obtained from the Registrar.

MEETING FOR FIRST YEAR WOMEN

All freshmen women are required to report at Barbour Gymnasium Tuesday, October 2, at 4 P. M., to receive general instructions from the Dean of Women and the Physical Director.

ADVISORY SYSTEM

General information may be obtained from the Committee of Faculty Advisors, who may be found in the Auditorium of University Hall throughout registration week and later at times and places to be announced. Students are urged to make this relation real and vital, and to consult their advisers freely whenever occasion arises. Information concerning rules and their interpretation should be obtained from the Dean and Registrar, who are also glad to advise with students on other matters.

RULES RELATING TO EXAMINATIONS AND MARKS

1. A final examination is given in every course in accordance with the schedule issued each semester. No examination may be held except as announced in this schedule, and no date of examination may be changed without special vote of the Faculty.

2. Students are required to take the examination in all courses except such as they may have dropped with consent of the Administrative Board.

3. Students are in no case examined at any other time than that set for the examination of the class in which the work has been done. In case of unavoidable conflicts a special examination during examination week may be arranged by the instructor with the consent of the Administrative Board.

4. The final semester reports are made in accordance with the following system of marking: A, excellent; B, good; C, fair; D, deficient, passed without points; E, not passed; I, incomplete; X, absent from examination. These reports are not given out to the

students by the instructors, but are regularly issued from the office of the Registrar.

Each hour of credit is valued in points as follows: A, three points; B, two points; C, one point; D, no points; E, no hours credit and no points. All advanced credit is regarded as of grade C.

This system of grades and points took effect in June, 1912. Each hour credit earned prior to that date is reckoned as of grade C.

5. The grade of D is an unsatisfactory mark. While it gives hours credit, it gives no points, which are equally required for graduation. It is considered as a deficiency. Like the other grades, it is final, and cannot be raised by subsequent work or examination.

6. If a student is reported E in any course, he can receive no credit for that course unless it has been again elected and pursued as though it had not been elected before.

7. A student may be reported Incomplete, if some small portion of his work remains unfinished, providing his standing in the course has been of grade C or higher. To secure credit, this work must be completed within one month after the beginning of the following semester; otherwise the course will be recorded as of grade E.

Any student who desires to remove an incomplete, must first obtain from the Registrar a blank form for presentation to the instructor in charge of the course. This blank, when signed, must be filed with the Registrar within one week from the time of the examination. A fee of $1.00 is charged for blanks obtained after the specified time.

8. A student reported Absent from Examination may, on presenting a satisfactory excuse, receive permission from the Administrative Board to take the examination within one month after the beginning of the following semester. In case such a supplementary examination be not taken and passed, the course will be recorded as of grade E.

Any student who desires to take an examination from which he was absent at the regular time and with satisfactory excuse. must make application to the *Registrar* upon a special blank during the *first two weeks* of the following semester. The examination will then be held, under supervision of the Registrar, during the fourth week of the semester.

9. Students of other schools or colleges who absent themselves from the courses elected in this College forfeit the privilege of electing courses in this College.

RULE RELATING TO LABORATORY COURSES

No credit is given for laboratory courses until all laboratory charges are paid, and in all cases where such charges are not paid within two weeks after the close of the semester in which the work was taken, a fine of $1.00 is imposed before credit is given. All regular laboratory *fees* are payable in advance.

This report of grade withheld is treated as an incomplete. In order to secure credit for the course, the student must, within one month after the beginning of the following semester, procure from the Registrar a blank, to be returned to him as soon as signed by the instructor. After two weeks from the close of the semester, this blank will be issued only upon presentation of the receipt of the Treasurer of the University for the $1.00 fine.

RULE RELATING TO DEFICIENCIES IN ENGLISH

Any instructor who finds the written work of a student seriously defective in its English is expected to report the case, together with specimen papers, to a committee consisting of the Dean and the Professor of Rhetoric, who shall have power to require additional work in composition without credit.

RULES RELATING TO DELINQUENTS

1. *Warning.*—A student whose work is unsatisfactory is warned. In all such cases notice of the character of the work is sent to the student and to his parents or guardian.

2. *Probation.*—A student whose work is extremely unsatisfactory is put on probation. This means that he is in imminent danger of dismissal from the University. During the period of probation the student is on trial to prove his fitness to do work in the University. He is required to devote all his time to his studies.

3. Any student renders himself liable to suspension for a breach of discipline, who, while upon probation, engages in any public exhibition, contest, game, or other public University activity.

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

For the rules governing participation in public activities see **page 86.**

RULES RELATING TO ABSENCE

1. All absences should be explained to the Committee on Attendance within one week. Every absence not explained within two weeks will be marked unexcused. If summonses are not responded to within one week all absences involved will be marked unexcused. Absences pending adjustment for more than one week will be marked unexcused.

2. Each absence on the day immediately preceding or following a vacation or holiday shall be counted as three.

3. Excessive absence shall render the student liable to a reduction in general credit for the semester.
4. Willful disregard of summons from the Attendance Committee or the Dean shall render the offender liable to suspension.

TRANSCRIPTS OF RECORDS

Students wishing statements of credits in order to transfer from this College to another, or for other purposes, should make early and seasonable application for the same. No such statements will be made out during the busy periods of examination and registration, September 20 to October 15, February 1 to March 1, and June 15 to July 1.

PHYSICAL TRAINING FOR MEN

Work in Waterman Gymnasium, twice a week, is required of first year students. The work begins on the first Monday in November, but students are expected to report to the Director of the gymnasium between October 1 and October 10 to make an appointment for physical examination and assignment to sections. No credit toward graduation is given for this work.

Advanced Classes in Athletics and Gymnastics for Those Desiring to Coach or Teach.—Every year a number of good positions are open, along the line of General Physical Training. Schools and colleges desire to secure, if possible, college men for this work. In order to meet this demand, it is the purpose to offer a course in Physical Training, which will cover most of the important details. No University credit will be given for this work, but prospective candidates must identify themselves with this course, and do satisfactory work in both theory and practice, in order to secure recommendation as to ability, etc.

Classes in Coaching of Competitive Athletics.—Classes will be offered in the theory and practice of coaching. These classes will be conducted in the four major branches of competitive athletics: football, baseball, track and field athletics, and basket ball. Members of the classes will be given actual coaching to do, and will meet twice weekly for recitation and quiz, covering the work done.

Classes in Gymnastics and General Physical Training.—Lectures and quizzes will be held in anthropometry, first aid, methods of teaching, growth and development, and gymnastic nomenclature. Particular attention will be given to the development of proficiency in practical gymnastic apparatus, and in squad leadership in calesthenic exercises. Enrollment for these classes should be made as soon as possible after the beginning of college. For further detailed information, apply to Dr. G. A. May, Director of Waterman Gymnasium, for work in Gymnastics and General Physical Training, and to F. A. Rowe, Director of Intramural Athletics, for work in Competitive Athletics.

PHYSICAL TRAINING FOR WOMEN

All First and Second year women are required to take and complete satisfactorily, without credit, a course in Physical Education to be given twice each week throughout the year under the conditions determined by the Physical Director for Women.

Women students are also required to take, during their first year of residence, a course of six lectures in Hygiene to be given by the Women's Physician.

Students will be excused from these requirements only by permission of the Dean of Women or the Physician for Women.

1. Regular Work. For all freshmen and sophomores whose medical and physical examinations show them able to do the regular work, two hours a week during the year.

The fall and spring work consists of elective sports out of doors, the winter work consists of the Swedish System of Gymnastics for the improvement of posture, breathing, and muscular coordination, apparatus work, marching, folk dancing, and games.

2. Special Work. For all freshmen and sophomores whose physical examinations show the need of corrective work, two hours a week during the year. Hours to be arranged.

3. Light Work. For all freshmen and sophomores whose medical examination shows them unable to take the regular work. Hours to be arranged.

4. Advanced Gymnastics. For all those who have completed the required work or offer credit, two hours a week during indoor work. Hours to be arranged.

5. Aesthetic and Folk Dancing, beginning and advanced.

6. Normal classes in Play Ground Games and Dances once a week during indoor work. (This course is subject to change and may be given only in alternate years.)

7. Athletics, Hockey, Tennis, Group Games, Archery, Cross Country Walking, and Baseball are included in outdoor work and Basket Ball and Swimming indoors during the winter. These are all open as electives.

8. Swimming, individual instruction. Open to all women students in the University.

No student can take part in any of the work described in the foregoing courses until she has purchased a locker ticket. This ticket is to be obtained from the University Treasurer.

The gymnastic work announced for freshmen and sophomores is a regular academic requirement, and as such is subject to the usual regulations regarding absence and quality of work.

All freshmen and sophomore women students are given a careful medical and physical examination. Other students taking any of this work are required to undergo heart and lung tests.

A regulation costume of white blouse and black bloomers and black gymnasium shoes is required. It is advisable to purchase these through the office of the Director.

COMBINED CURRICULA IN LETTERS AND MEDICINE

A.B. and M.D.*

Students desiring to obtain the degrees of Bachelor of Arts in the College of Literature, Science, and the Arts, and of Doctor of Medicine in the Medical School, or in the Homœopathic Medical School, may, by enrolling on the Combined Curriculum in Letters and Medicine, shorten from eight years to seven the time required to earn the two degrees. This privilege is open only to students who throughout their course maintain a uniform record of good† scholarship. The work is done under the direction of a Committee of five members representing the college and school. With the consent of the Committee in charge, a candidate for the degree of Bachelor of Arts, who has been a student in the College of Literature, Science, and the Arts for at least one year, and has 90 or more hours to his credit, of which at least 30 hours have been earned in the College of Literature, Science, and the Arts of this University, may enroll upon the combined curriculum; that is, while continuing his registration in this college he may also register in the Medical School, provided the work he has already completed includes a sufficient number of the courses enumerated below to enable him to complete within one year the specific requirement described in the following paragraphs.

All students who desire to enter upon the Combined Curriculum in Letters and Medicine must, before May 15 of the year preceding double registration, file with the Registrar, upon a blank to be obtained from him, a petition to be granted that privilege.

When the student so registered in the college or school has completed the first year of the medical curriculum, and not less than 90 hours in the College of Literature, Science, and the Arts, he will be recommended for the degree of Bachelor of Arts, provided he has completed the requirements for graduation from the latter college (see page 122), and provided his work has included the following courses, in lieu of the group requirements:

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* All students entering upon the Combined Curriculum must satisfy fully the requirements for admission to the College of Literature, Science, and the Arts. They must present two units of Latin and should also present Trigonometry, Physics, and Chemistry. Otherwise an attendance upon one Summer Session will ordinarily be necessary in addition to the residence herein prescribed.

† The applicant will be expected to have earned at least one and one-third times as many points as hours.

Rhetoric, 6 hours, including Courses 1 and 2.
French and German, 16 hours of either one, and 8 hours of the other. (Each unit of French or German offered in the preparatory work reduces by four hours the requirement in that language.)
English, 6 hours.
Psychology, 6 hours.
Electives from Group III, 12 hours, unless excused in part by the Committee.
Physics, 10 hours, including two hours of laboratory work.
Chemistry, general, qualitative, and organic, 12 hours for students presenting Chemistry for entrance, otherwise 16 hours.
Physical Chemistry, 4 hours.
Zoology, 10 hours.
Botany, 4 hours.
Total, 90 hours.

Suggested electives: Latin or Elementary Greek, 8 hours; History, or Political Economy, or Philosophy, 8 hours; Qualitative Analysis, 4 hours; Organic Chemistry, 5 hours.

B.S. (in Med.) and M.D.

Students who so desire, may obtain the degrees of Bachelor of Science in Medicine and Doctor of Medicine in six calendar years by complying with the requirements above set forth except that they must complete the first and second years of the Medical Curriculum, and that the credit required from the College of Literature, Science, and the Arts instead of 90 hours, shall be 75 hours, of which at least 67 hours must be completed before they may enter upon the combined curriculum, and shall include the following courses, in lieu of the group requirements:

Rhetoric, 6 hours, including Courses 1 and 2.
French or German, 16 hours. (Each unit of French or German offered in the prepaartory work reduces by 4 hours the requirement in that language.)
Electives from Group III, 12 hours.
Physics, 10 hours, including two hours of laboratory work.
Chemistry, general, qualitative, and organic, 12 hours for students presenting Chemistry for entrance, otherwise 16 hours.
Zoology, 4 hours.
Botany, 4 hours.
Total, 62 or 66 hours.

The completion of this curriculum will ordinarily require two and one-half years, or two years and two summer sessions, in the College of Literature, Science, and the Arts. Students whose scholarship is sufficiently high may apply for permission to elect a limited number of extra hours.

Electives are suggested from the courses before mentioned.

COMBINED CURRICULUM IN LETTERS AND LAW

Students desiring to obtain the degrees of Bachelor of Arts in the College of Literature, Science, and the Arts, and of Bachelor of Laws, in the Law School, may, by enrolling on the Combined Curriculum in Letters and Law, shorten from seven years to six the time required to earn the two degrees. This privilege is open only to students, who throughout their course, maintain a uniform record of good* scholarship. The work is under the direction of a joint committee of five members, representing the college and school. With the consent of the committee in charge a candidate for the degree of Bachelor of Arts, who has been a student in the College of Literature, Science, and the Arts for at least one year, and has 92 or more hours to his credit, of which at least 30 hours have been earned in the College of Literature, Science, and the Arts of this University, may enroll on the combined curriculum; that is, while continuing his registration in this college he may also register in the Law School, provided the work he has already completed includes a sufficient number of the courses enumerated below to enable him to complete within one year the specific requirement described in the following paragraphs.

All students who desire to enter upon the Combined Curriculum must, before May 15 of the year preceding double registration, file with the Registrar, on a blank to be obtained from him, a petition to be granted that privilege.

When the student so registered in the college and school has completed the first year of the law curriculum and not less than ninety-two hours in the College of Literature, Science, and the Arts, he will be recommended for the degree of Bachelor of Arts, provided he has completed the requirements for graduation from the latter College (see page 122), and provided his work has included the following courses, in lieu of the group requirements:

Rhetoric, 12 hours, including Courses 1, 2, 3, and 4.
Latin, or French, or German, or Spanish, 8 hours. (Each unit of French, German, or Spanish offered in the preparatory work reduces by 4 hours the requirement in that language.)
English Literature, 6 hours.
English History, 1*a* and 2*a*, or 3 and 4.

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* The applicant will be expected to have earned at least one and one-third times as many points as hours.

Mathematics, or a science including laboratory work, 8 hours.

Electives from Group II, 4 hours.

Total, 44 or 46 hours.

Latin is strongly urged as desirable for every student preparing to study law.

In addition to the required courses the student is advised to elect at least forty hours from the following subjects:

Latin or Elementary Greek, 8 hours, Courses 3 and 4; French, German, or Spanish, 16 hours; History, 14 hours, including Courses 14 and 15; Political Science, 12 hours; Economics, 16 hours, including Courses 1, 6, 9, 9*a*, 15 and 38; Philosophy, 7 hours, including Logic, or Psychology, and Political Philosophy or Ethics; Mathematics, 2 hours, Course 51; Oratory, 4 hours.

TWO YEAR PROGRAM

PRELIMINARY TO THE STUDY OF LAW

The following program in the College of Literature, Science, and the Arts is suggested by the Faculty of the Law School for students looking to the study of law, who are unable to devote more than two years to collegiate preparation.

FIRST YEAR

Rhetoric, Courses 1, 2.
Latin, Courses 1, 2.
History, Courses 1*a*, 2*a*.
Mathematics, Courses 1, 2.

SECOND YEAR

Rhetoric, Courses 3, 4.
Latin, Courses 3, 4.
English Literature, 6 hours.
Political Science, Courses 1, 2.
History, Courses 14, 15.
Economics, Courses 1, 2.
Philosophy, Course 9 (Logic).
Oratory, Courses 1, 2.

All students in the College of Literature, Science, and the Arts, who contemplate the study of law, are urged to select so far as possible from the program outlined above. Those who wish to elect work in oratory and debating should take this work before entering the Law School. The substitution of a modern language for Latin may be made in the case of students whose preliminary work has not included the necessary preparation, though students of law are strongly urged to include Latin in the curriculum.

COMBINED CURRICULUM IN LETTERS AND DENTAL SURGERY*

Students desiring to obtain the degrees of Bachelor of Arts in the College of Literature, Science, and the Arts, and of Doctor of Dental Surgery in the College of Dental Surgery, may, by enrolling on the Combined Curriculum in Letters and Dental Surgery, shorten from seven years to six the time required to earn the two degrees. This privilege is open only to students who throughout their course maintain a uniform record of good† scholarship. The work is under the direction of a Committee of five members representing the two Colleges. With the consent of the Committee in charge, a candidate for the degree of Bachelor of Arts, who has been a student in the College of Literature, Science, and the Arts for at least one year, and has 90 or more hours to his credit, of which at least 30 hours have been earned in the College of Literature, Science, and the Arts of this University, may enroll upon the combined course; that is, while continuing his registration in this college he may also register in the College of Dental Surgery, provided the work he has already completed includes a sufficient number of the courses enumerated below to enable him to complete within one year the specific requirements described in the following paragraphs.

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* This Combined Curriculum will undergo considerable change because of the lengthening of the Dental curriculum to four years. Necessary modification will be announced next year.

Students who desire to enter upon the Combined Curriculum in Letters and Dental Surgery must, before May 15 of the year preceding double registration, file with the Registrar, on a blank to be obtained from him, a petition to be granted the privilege.

When the student so registered in the two colleges has completed the first year of the dental curriculum, and not less than 90 hours in the College of Literature, Science, and the Arts, he will be recommended for the degree of Bachelor of Arts, provided he has completed the requirements for graduation from the latter college (see page 122), and provided his work has included the following courses:

Rhetoric, 6 hours, including Courses 1 and 2.
French and German, 16 hours of either one, and 8 hours of the other. (Each unit of French or German offered in the preparatory work reduced by 4 hours the requirement in that Language.)
English, 6 hours.
History, 8 hours.
Electives from Group III, 4 hours.
Physics, 12 hours, including 4 hours of laboratory work.
Chemistry, general, qualitative, and organic, 14 hours for students presenting Chemistry for entrance, otherwise 18 hours.
Zoology, 10 hours.
Botany, 4 hours.
Total, 90 hours.

Suggested electives: Latin or Greek, 8 hours; Philosophy, 3 hours; Physical Chemistry, 3 hours.

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† The applicant will be expected to have earned at least one and one-third times as many points as hours.

SUGGESTED PROGRAM FOR STUDENTS SPECIALLY INTERESTED IN THE STUDY OF FOREIGN LANGUAGES

Freshman Year

Two foreign languages, 8 hours (Greek, Latin, French, Spanish, or German). *a*

Mathematics, or a Science (Biology, Chemistry, Physics, or Physiography), 4 hours.

Rhetoric, 3 hours.

All Freshman subjects continue throughout the year.

Sophomore Year

Two foreign languages continued, 8 hours, each semester.

Third foreign language begun, 4 hours, each semester. *b*

Philosophy 7 (Psychology), 3 hours, and Zoology 3, 1 hour, first semester, and Philosophy 1, 3 hours, second semester, *c;* or

Mathematics, or English, or Science, or History (General, or English, or Ancient), 4 hours, throughout the year.

Junior Year

Languages of main interest, 5 or 6 hours, each semester.

Third group requirement, 4 or 5 hours, each semester, chosen from Education, 1, 2, and 5, Political Science, 1 and 2, Philosophy, History, or Sociology. *d*

Other electives, 4 or 6 hours each semester.

Senior Year

Major language work should not exceed 6 hours each semester.

Minor language work should not exceed 4 hours each semester.

Other electives, 6 or more hours, each semester. *e*

Notes

a. Continuation of one or both of the languages studied in the high school is recommended; two new languages should not be begun in the same year.

b. Students specially interested in the study of Latin are recommended to begin Greek at this time, if it has not been taken previously; those presenting four units of Latin and two of Greek for admission are advised to continue both Latin and Greek in the first year, begin German or French in the first semester of the second year, and begin French or German in the first semester of the third year.

c. The student should complete the second group requirement during the year; by electing Psychology candidates for the Teachers' Diploma will at the same time be meeting one of the requirements for that diploma.

d. Candidates for the Teacher's Diploma should elect 4 or 6 hours in the department of Education during the year. The third group requirements must be completed during the year.

e. Candidates for the Teacher's Diploma will elect enough hours in the department of Education to complete the requirement of eleven hours.

CURRICULA IN JOURNALISM

Requirements for Admission. — Admission to the curricula in Journalism is restricted to persons who are candidates for a degree in the College of Literature, Science, and the Arts. Candidates may enroll with the Chairman of the Committee at any time not later than the beginning of the senior year, though an earlier enrollment is desirable.

Programs of Study.—In the selection of studies and the apportionment of hours, as indicated below, two classes of students have been taken into account: (A) those who wish to pursue a general course, (B) those who wish to fit themselves for a particular kind of writing or a special department of a newspaper. The elections may be modified to meet the needs of individuals.

The specific courses in journalism are given in the department of Rhetoric, where a description of them will be found.

A

GENERAL CURRICULUM

	HOURS		HOURS
Newspaper Work	18	Economics	10
Other Courses in Rhetoric	12	Sociology	4
English	10	Philosophy	3
Foreign Language	16	Law	3
History	16	Science (including Psychology)	12
Political Science	6	Electives	10

B

SPECIAL CURRICULA

I

For students who wish to specialize in History, Government and Politics.

	HOURS		HOURS
Newspaper Work	14	Political Science	16
Other Courses in Rhetoric	12	Economics	10
English	10	Sociology	4
Foreign Language	16	Law	6
History	20	Science	12

2

For students who wish to specialize in Economics and Sociology.

	HOURS		HOURS
Newspaper Work	14	Economics	24
Other Courses in Rhetoric	12	Sociology	12
English	10	Law	6
Foreign Language	16	Science	12
History	14		

3

For students who wish to specialize in reviewing, and in dramatic art, and musical criticism.

	HOURS		HOURS
Newspaper Work	18	History	14
Other Courses in Rhetoric	15	Philosophy	7
English	20	Music (or other arts)	10
Foreign Language	24	Science	12

4

For students who wish to specialize in technical journalism.

	HOURS		HOURS
Newspaper Work	18	Political Science	6
Other Courses in Rhetoric	15	Economics	20
English	10	Sociology	4
Foreign Language	16	Law	6
History	14	Science	12

Special Lectures. — Lectures upon newsgathering, newswriting, copy reading, editorial writing, newspaper management and other important features of newspaper method and procedure, will be given in the course of the year by prominent newspaper men.

For printed information concerning the requirements for admission to the University, dates of entrance examinations, conditions of admission to advanced standing, or requirements for graduation, address the Secretary of the University, Ann Arbor, Michigan. Correspondence on these subjects should be addressed to Dean J. R. Effinger, or the Registrar. Correspondence on the courses in journalism should be addressed to Professor F. N. Scott, Ann Arbor, Michigan.

CURRICULA IN BUSINESS ADMINISTRATION

The Curricula in Business Administration are organized as special programs of study in the College of Literature, Science, and the Arts. Their aim is to give semi-professional training in the organization and processes of modern industry and to assist the student in the selection of such other lines of study, offered in the college, as will give general culture to supplement this training.

Four-year programs of study, leading to the bachelor's degree, are now offered in GENERAL BUSINESS, BANKING, INSURANCE, ACCOUNTING, RAILWAY ADMINISTRATION, and MINE ADMINISTRATION. The required work in these varies from 70 to 80 hours and includes various courses in Political Economy, Industrial Technique, Industrial and Social History, Money, Banking and Finance, Commerce and Transportation, Accounting and Business Organization, Insurance and Statistics, Law and Administration, and Applied Science.

Whichever program is chosen, the student must elect Rhetoric 1 and 2 and Mathematics 1 and 2 and a total of 24 hours of modern language. Departures from the printed programs may be made at any time by consent of the Committee.

Not more than sixteen hours a week may be elected except by special permission obtained from the Committee on Extra Hours in accordance with the rules of the College, (see page 126).

Enrollment should take place at the beginning of the first year and not later than the beginning of the third year of residence. Only candidates for a degree may be enrolled.

Students completing any of the programs laid down will receive, in addition to the University diploma, a special certificate signed by the President of the University.

A special announcement of the Curricula in Business Administration may be obtained by addressing the Secretary of the University. Correspondence concerning the courses may be directed to Professor I. Leo Sharfman, 6 Geddes Heights, Ann Arbor. Inquiries concerning requirements for entering the University, or credit for advanced work, should be addressed to Dean J. R. Effinger, The University, or the Registrar.

CURRICULUM IN MUNICIPAL ADMINISTRATION

The curriculum in municipal administration is organized as a special program of study leading to the degree of Master of Arts, or Master of Science, in Municipal Administration. The last year of work must be pursued in the Graduate School, but many of the prescribed courses should be taken as undergraduate work.

The program of courses is designed to meet the needs of all those who aim to take an active part in the guidance of municipal affairs. It should be of greatest utility in training for municipal office, whether of bureau, division, or department head, of mayor, or director under the commission form of city government, or of city manager; and for such public or semi-public positions as director of bureaus of municipal reference and research or as civic and commercial secretary.

It is desirable that students intending to pursue this program should communicate as early as practicable in their academic period with the chairman of the Committee on the Program of Courses in Municipal Administration. An announcement of this program is issued in the form of a special bulletin by the University and may be obtained by addressing the Secretary of the University. General correspondence concerning the course may be directed to the Chairman of the Committee, Professor Robert T. Crane, Bureau of Government, University of Michigan. Inquiries regarding entrance requirements or credit for advanced work should be addressed to Dean J. R. Effinger, or the Registrar.

The privilege of making certain elections in the College of Engineering, the Medical, or the Law School, is granted to students enrolled in this curriculum.

In addition to the requirement of elementary courses in Political Science and Political Economy, each equivalent to six semester hours' work, twelve semester hours of science, and twelve semester hours of foreign language, the courses listed below are either required or elective for students looking forward to a degree in municipal administration:

Required Courses.—Municipal Government, 6 hours; Seminary in Municipal Administration, 4 hours (work in this seminary will be required during the entire period of graduate enrollment in the program); Principles of Accounting 3 hours; Municipal Accounting, 2 hours; Mathematical Theory of Finance, 3 hours; City Planning and Civic Improvement, 3 hours; Water Works, 3 hours; Sewerage, 2 hours; Sanitary Science, 1 hour; Municipal Engineering, 2 hours; Roads and Pavements, 2 hours; Municipal Corporations, 2 hours.

Elective Courses.—Public Finance, 3 hours; Public Service Industries, 2 hours; Public Officers, 2 hours; Highway Laboratory, 2 hours; Municipal Lighting, 2 hours; General Hygiene, 3 hours; Administration of Health Laws, 2 hours; Problems in Sociology, 3 hours.

CURRICULUM IN CHEMISTRY

The Curriculum in Chemistry has been devised for students registered in the College of Literature, Science, and the Arts who desire to prepare themselves for professional work in chemistry. The Board of Regents of the University, at their May meeting, 1914, authorized the preparation of a program of studies leading to the degree of Bachelor of Science in Chemistry. The requirements of the College of Literature, Science, and the Arts in regard to admission, election of studies, grades, discipline, and graduation apply to students taking the curriculum in chemistry, except for some modifications of the group requirements. Students who complete either of the programs of study outlined below will satisfy the requirements for graduation leading to the degree of Bachelor of Science in Chemistry.

Students intending to take the curriculum in chemistry should also enroll with the enrollment committee of the chemical faculty at the beginning of their University residence. This committee consists of Professors Smeaton, Willard, and Bartell. Students in their second, third, or fourth year of University residence may prepare themselves to become candidates for the degree of Bachelor of Science in Chemistry upon completing the required courses, or their equivalents, as outlined in the programs of study. Students in this course are advised to remain for at least one summer session during the period of University residence, to provide opportunity for more elective work than is permitted by the schedule of studies during the first three years. Those planning to go on with graduate work are urged to take such additional courses in French and German as will enable them to become thoroughly cognizant of the scientific literature in both these languages.

PROGRAM OF STUDIES

I

†Students entering without German or Chemistry.

FIRST YEAR

FIRST SEMESTER	Hours	SECOND SEMESTER*	Hours
Mathematics 1	4	Mathematics 2	4
German 1	4	German 2	4
Rhetoric 1	3	Rhetoric 2	3
Chemistry 1 and 1*a*	4	Chemistry 2 and 2*a*	4
	15		15

SECOND YEAR

	Hours		Hours
Physics 1	4	Physics 2	4
**Physics 3*a*	1	**Physics 4*a*	1
Mathematics 3*a*	3	Mathematics 4*a*	3
German 3	4	German 4	4
***Chemistry 3	5	Chemistry 5	5
	17		17

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† Students presenting two units of German for admission will take German 3 and 4 the first year and either German 9 and 9a (College of Engineering) or French 1 and 2 the second year.

* Students beginning chemistry the second semester must elect Chemistry 1b and follow this with either Chemistry 2b or 2E the first semester of the next year, or with Chemistry 2 and 2a in the summer session. The latter course is advised. For the remaining courses in Chemistry see (†) below.

** Permission to elect 17 hours in the College of Literature, Science, and the Arts is granted to applicants for extra hours who have a record for superior scholarship. Failure to obtain this permission would necessitate the elimination of Physics 3a or Physics 4a from the program of study in the second year.

*** Chemistry 3 may be elected by students who have completed Chemistry 2, 2b or 2E with the grade A or B. Students completing one of these three courses with the grade C may elect Chemistry 3 only by permission of the instructor in charge of Chemistry 3, but students with the grade D may not elect Chemistry 3 at all. Students who may not elect Chemistry 3 must elect Chemistry 3a and follow this with Chemistry 3b before taking Chemistry 5.

THIRD YEAR

	Hours		Hours
Chemistry 7	5	Chemistry *7a*	4
Chemistry 28	5	Chemistry 8	4
Elective—Group III	6	Chemistry 35	2
		Elective—Group III	6
	16		16

FOURTH YEAR

	Hours		Hours
Chemistry 13	4	Chemistry 15	2
Physics 5	4	Elective in Chemistry (during fourth year	6
Technical Chemistry (during fourth year)	4	Elective	8
Elective	4		
	16		16

Students entering with one unit of Chemistry will take Chemistry 2b or 2E, followed by Chemistry 3, in the first year, Chemistry 5 and 28 the second year, and Chemistry 35 in the first semester of the third year.

SUGGESTED ELECTIVES IN GROUP III TO FULFILL THE REQUIREMENTS OF THE COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS

THIRD YEAR

FIRST SEMESTER	Hours	SECOND SEMESTER	Hours
Political Science 1	3	Political Science 2	3
Economics 1*E*	3	Philosophy 1	3
	6		6

General correspondence concerning the course may be directed to the Professor of Chemistry, The University, Ann Arbor. Inquiries concerning entrance requirements or credit for advanced work should be addressed to Dean J. R. Effinger, The University, or the Registrar.

CURRICULUM IN LANDSCAPE DESIGN

The Curriculum in Landscape Design is organized as a special program of study in the College of Literature, Science, and the Arts, and leads to a special degree (Master in Landscape Design). It requires a minimum of five years' college work. The program is as follows:

Program of Studies

FIRST YEAR

FIRST SEMESTER	Hours	SECOND SEMESTER	Hours
Rhetoric 1	3	Rhetoric 2	3
Foreign Language	4	Foreign Language	4
Drawing 4*a*	3	Mathematics	4
Architecture	3	Botany	4
Drawing 21	2	Drawing 22	1

SECOND YEAR

	Hours		Hours
English 1	3	English 2	3
Foreign Language	4	Foreign Language	4
Landscape Design 1	3	Landscape Design 4	3
Landscape Design 3	3	Landscape Design 5	3
Drawing 23	2	Architecture 4	2

THIRD YEAR

	Hours		Hours
Landscape Design 2	3	Landscape Design	3
Landscape Design	3	Landscape Design 6	4
Drawing 24	2	Drawing 30	2
Architecture 11	2	Architecture 12	2
Surveying 1	3	Surveying 2*a*	2
Elective	3	Elective	3

Summer Term: Surveying 3, 8 hours at Camp Davis.

FOURTH YEAR

	Hours		Hours
Landscape Design 7	4	Landscape Design 8	4
Drawing	2	Landscape Design 16	2
Architecture 13	2	Drawing	2
Electives	7 or 8	Architecture 14	2
		Electives	5 or 6

FIFTH YEAR

	Hours		Hours
Landscape Design 9	4	Landscape Design 10	4
Landscape Design 11	4	Landscape Design 12	5
Electives	6	Law 1	2
		Elective	3

Twelve of the elective hours in the third and fourth years must be from subjects included in Group III.

The following courses must be included among the electives:

	Hours		Hours
Geology 3	3	Political Science 3	3
History 5 and 6 or 14 and 15	6	Civil Engineering 34	1
Physics 1 and 2	8	Civil Engineering 36	2
Political Economy 1*a*	3	Civil Engineering 40	2

Students entering the course on advanced standing may be permission of the Professor in charge and at his discretion, substitute other courses of equivalent time value for some of those specified above.

Other courses recommended are as follows:

Zoology 6.
Forestry 1, 2, 5, 20, and 22.
Philosophy 1.
Political Science 1, 2, and 4.
Business Administration 31, and 32.
Civil Engineering 41, and 43.

Not more than sixteen hours a week may be elected except by special permission obtained from the Committee on Extra Hours in accordance with the rules of the College, (see page 126).

The object of the curriculum is primarily to train professional landscape designers, and hence it includes lines of study which are essential to a liberal college education in addition to the technical studies. Courses 1, 5, and 2, in the department of Landscape Design are open to all students in the University.

No one will be allowed to complete all the courses in landscape design as an undergraduate. At least the last year of work must be taken as a graduate student.

The privilege of taking certain electives in the Law School and the College of Engineering is granted to students enrolled in this course.

A special bulletin on the Curriculum in Landscape Design, containing the required program and other information, may be obtained by addressing the Secretary of the University. Correspondence concerning the course may be addressed to Professor Aubrey Tealdi, The University, Ann Arbor. Inquiries concerning the requirements for entering the University, or for credit for advanced work, should be addressed to Dean J. R. Effinger, The University, or the Registrar.

CURRICULUM IN FORESTRY

The Curriculum in Forestry is organized as a special program of study in the College of Literature, Science, and the Arts, and leads to special degrees (Bachelor of Science in Forestry and Master of Science in Forestry). The requirements for the degree of Bachelor of Science in Forestry are stated on page 123. The prescribed curriculum there referred to is as follows:

PROGRAM OF STUDIES

Four Year Curriculum

FIRST YEAR

FIRST SEMESTER	Hours	SECOND SEMESTER	Hours
Rhetoric 1	3	Rhetoric 2	3
Botany 1	4	Zoology 1	4
Mathematics 1	4	Mathematics 2	4
Chemistry 1 and 1*a*	4	Chemistry 2 and 2*a*	4
		Forestry 22	1

SECOND YEAR

	Hours		Hours
Surveying 12	4	Surveying 13	4
Botany 13	4	Botany 14	4
Physics	4	Mineralogy 9	2
Mineralogy 1	2	Forestry 1	4
Zoology 20	2	Forestry 2	2

THIRD YEAR

	Hours		Hours
Forestry 5	4	Forestry 4	2
Forestry 7	4	Forestry 8	4
Forestry 13	2	Forestry 10	4
Forestry 17	2	Forestry 14	3
Geology 1E	3	Geology 15F	3

Summer term: Surveying 3, eight hours at Camp Davis.

FOURTH YEAR

	Hours		Hours
Forestry 3	2	Forestry 16	4
Forestry 9	4	Forestry 18	2
Forestry 15	4	Forestry 20	3
Forestry 19	3	Economics 1E	3
Botany 17	4	Zoology 6	3

Five Year Curriculum

Students desiring to devote five years to the curriculum are advised to arrange the program as follows:

During the first three years the work is the same as described above. For the fourth and fifth years the work is arranged as follows:

Summer Term after the third year: Surveying 3, eight hours: at Camp Davis.

FOURTH YEAR

FIRST SEMESTER	Hours	SECOND SEMESTER	Hours
Forestry 3	2	Forestry 12	2 to 4
Forestry 9	4	Forestry 26	4
Forestry 11	2 to 4	Electives	5 to 9
Forestry 19	3		
Botany 17	4		
Electives			

FIFTH YEAR

	Hours		Hours
Forestry 11	2 to 4	Forestry 12	2 to 4
Forestry 15	4	Forestry 16	4
Economics 38	4	Forestry 18	2
Electives	4 to 8	Economics 1E	3
		Economics 38*a*	4

Students preferring to do so, may substitute advanced work in botany, entomology, or engineering.

Not more than sixteen hours a week may be elected except by special permission obtained from the Committee on Extra Hours in accordance with the rules of the College, (see page 126).

There are two main classes of forestry students:

(A). Those who enter this University as undergraduates with the intention to take the degree of Bachelor of Science in Forestry at the end of their fourth year. Some of these students continue their work another year and receive the degree of Master of Science in Forestry.

(B). Those who begin the study of forestry as graduate students (except candidates for the doctorate). Such students require two years to complete the course in forestry, and receive the degree of Master of Science in Forestry.

In addition to the above, there are two other classes of forestry students:

(C). Candidates for the doctorate (Doctor of Philosophy or Doctor of Science) may elect one or both minors in forestry.

(D). Under very exceptional circumstances, special students will be admitted to the work in forestry.

A special bulletin describing the curriculum in forestry, and containing the required program and other details, may be obtained by addressing the Secretary of the University. General correspondence concerning the curriculum may be directed to the Professor of Forestry, The University, Ann Arbor. Inquiries concerning entrance requirements or credit for advanced work should be addressed to Dean J. R. Effinger, The University, or to the Registrar.

Important Notice

Students entering the College of Literature, Science, and the Arts with the intention of taking the Curriculum in Forestry should inform the Committee on Elections of that intention, in order that their election of studies may be made in accordance with the prescribed program given above.

All Forestry students entering the University with advanced standing and those transferring from some other course to that of Forestry, should consult the faculty of the department of Forestry before making their elections.

The Curriculum in Forestry is prescribed throughout, and must be taken in the order given above. No deviations may be made from this order except by written permission of the Professor of Forestry.

Before making elections each semester, all Forestry students should advise with a committee of the Forestry faculty appointed for that purpose.

TEACHER'S DIPLOMA AND TEACHER'S CERTIFICATE

The aims of the University in providing instruction in the Science and the Art of Teaching are as follows:

1. To fit the University students for the higher positions in the public school service.
2. To promote the study of educational science.
3. To teach the history of education, and of educational systems and doctrines.
4. To secure to teaching the rights, prerogatives, and advantages of a profession.
5. To give a more perfect unity to our State educational system by bringing the secondary schools into closer relations with the University.

Teacher's Diploma

The Teacher's Diploma is given to a student in connection with his bachelor's degree, provided he has taken eleven hours, including Courses 2, 4*a*, *b*, *c*, *d*, *e*, *f*, or *g*, 5, and 13 (or 32) in Education.

The Diploma is also given to a graduate student at the time of receiving a master's or a doctor's degree, provided he has pursued teaching as a major or a minor study, or has otherwise satisfactorily completed an equivalent amount of pedagogical work.

Teacher's Certificate

By authority of an act of the State Legislature, passed in 1891 and amended in 1903, the Board of Regents, acting upon the recommendation of the Faculty of this College, gives a Teacher's Certificate to any person who takes a bachelor's, master's, or doctor's degree, and also receives a Teacher's Diploma as provided above. By the terms of the act, the certificate given by the Regents "shall serve as a legal certificate of qualification to teach in any of the schools of this State, when a copy thereof shall have been filed or recorded in the office of the legal examining officer or officers of the county, township, city, or district."

The life certificate of Michigan is ordinarily accepted by transfer in other states. Since the legal requirements for teachers' licenses in some states, however, exceed those in Michigan, students should take into account the requirements in the state in which they expect to teach.

TEACHER'S APPOINTMENT COMMITTEE

An appointment committee of the Faculty of the College of Literature, Science, and the Arts has been constituted for the purpose of assisting men and women who are studying, or have studied, under this Faculty, to secure positions as teachers. This service is performed gratuitously, in the interest of students of the University, past or present, and of superintendents of schools and boards of education wishing to employ teachers. Persons desiring to reach this committee should address their communications to the Secretary of the Appointment Committee, The University.

FEES AND EXPENSES

The matriculation Fee and the Annual Fee must be paid in advance, and no student can enter upon his work until after such payment. For the rules governing Second Semester Fees and the refunding of fees see page 101.

Matriculation Fee.—For Michigan students, *ten dollars;* for all others, *twenty-five dollars.*

Annual Fee.—For Michigan students, *forty-two dollars;* for all others, *sixty-two dollars.*

Part Time Fee.—Persons engaged in teaching in public, parochial, or private schools who are regularly admitted as students in the College of Literature, Science, and the Arts, may elect not more than five hours a week, upon the payment of a fee of *ten dollars* in lieu of the regular annual fees. Such students must pay the matriculation fee the same as other students.

Graduation Fee.—For all alike, *ten dollars.*

Teacher's Diploma Fee.—For all alike, *two dollars.*

Laboratory Fees.—Students who pursue laboratory courses are required to pay for the materials and apparatus actually consumed by them. The deposits required in advance range from one to twenty dollars. In the chemical laboratory the average expense for each course is about one dollar and twenty cents a week.

The laboratory fee must in all cases be paid to the Treasurer of the University before the students may enroll in the class.

Gymnasium Fee.—For the rental of a locker in the Gymnasium fee of two dollars is charged for men, one dollar for women.

For additional information in regard to expenses, see page 99.

COURSES OF INSTRUCTION

The Courses of Instruction are subject to change from time to time. From the courses offered in the various branches of learning, the student is allowed to make his choice, under regulations prescribed by the Faculty (see page 126).

The courses announced for the year 1916-1917 are described below. Those to be offered in 1917-1918 may be expected to differ but slightly from those given here. The amount of credit toward graduation assigned to each course is indicated by the expression *one hour, two hours,* etc.

ABBREVIATIONS: U. H.—Main Hall of University Hall. M. H.—Mason Hall, the North Wing of University Hall. S. W.—South Wing of University Hall. T. H.—Tappan Hall. W. H.—West Hall. Ec.—Economics Building. Ph.—Physical Laboratory. Ch.—Chemical Laboratory. N. S.—Natural Science Building.

GREEK LANGUAGE AND LITERATURE

Students especially interested in language study are advised to elect two foreign languages in the freshman year. Two new languages, however, should not be begun at the same time. A suggested program in language study is outlined on page 137.

Students intending to enter upon the study of Greek at any time in their course will find it to their advantage to do so in their first year.

The courses marked A, B, are designed for those who have had no opportunity to take Greek before admission, or have not been able to complete the entrance requirements in Greek. Course C is intended for students who have had only one year's work in Greek before entering the university. A credit of four hours will be given for each one of these courses satisfactorily completed.

Courses 1 and 2 must precede all the other numbered courses except those grouped below under the heading "Greek Courses in English."

In addition to Courses 1, 2, 3, and 5, students who are preparing to teach Greek are recommended to elect at least twelve hours more under the advice of the instructors in the department.

During the period from September 27 to October 4, the instructors in the department will be found in Room 108, T. H., from 10 to 12, and prospective students are urged to consult them. Conferences will be held as follows:

Professor BONNER, September 27-28, October 2.
Professor WINTER, September 29-30.
Dr. ROBBINS, October 3-4.

Consultation hours. After the opening of the university year, the instructors in the department may be consulted as follows:

Professor BONNER: *Tu, Th,* at 10. Room 305, M. H.
Professor WINTER: *M, W, F,* at 3. Room 107, T. H.
Dr. ROBBINS: *Tu, Th,* at 11. Room 107, T. H.

Greek

FIRST SEMESTER

A. Elementary Greek. *Four hours.* Two sections. Dr. ROBBINS.
No credit towards graduation is counted for this course until Course B is satisfactorily completed.
This course, with its continuation, Course B in the second semester, will enable students to take up Course 1 the following year.

C. Xenophon's *Anabasis,* or other selections from easy Attic prose. Homer, *Iliad* or *Odyssey,* one book. Review of Grammar. *Four hours.* Professor BONNER.
This course is intended for students who have had only one year of Greek before entering the University.

1. Plato, *Apology;* Homer, *Odyssey,* selections. *Four hours.* Professor WINTER.

3. Selections from the lyric and elegaic poets, and from the history of Herodotus. *Three hours.* Professor BONNER.

6a. Historical Greek Grammar. Lectures on Greek Grammar, with special reference to the origin of inflectional forms. *Two hours.* Professor MEADER.

[7a. Seminary. The History of Herodotus. Professor BONNER. Omitted in 1916-1917.]

[7b. Seminary in the Greek Comedy. Professor BONNER. Omitted in 1916-1917.]

[7*c*. Seminary. The Tragedies of Sophocles. Professor **Winter**. Omitted in 1916-1917.]

7*d*. Seminary in Euripides. *Two hours.* Professor **Bonner**.

[12. Demosthenes, *On the Crown.* Reading of the entire oration, lectures and assigned readings dealing with the historical situation; studies in the style of Demosthenes. Dr. **Robbins**. Omitted in 1916-1917.]

[17. Aristophanes: Select Plays, with studies in the life and times of the poet. Professor **Bonner**. Omitted in 1916-1917.]

21. Pindar. The Olympian and Pythian Odes, and selections from Bacchylides. *Three hours.* Professor **Bonner**.

31. Reviews in Greek Literature, Grammar, and Antiquities. For candidates for the higher degrees. *One hour.* Professors **Bonner** and **Winter**, and Dr. **Robbins**.

SECOND SEMESTER

B. Elementary Greek. Continuation of Course A. Xenophon's *Anabasis* and Greek prose writing. *Four hours.* Two sections. Dr. **Robbins**.

2. Homer, *Odyssey;* continuation of selected readings: Euripides, *Medea.* *Four hours.* Professor **Winter**.

5. Greek Drama. Sophocles, *Antigone;* Aristophanes, *Birds* or *Frogs.* *Three hours.* Professor **Bonner**.

6*b*. Greek Prose Composition. *Two hours.* Dr. **Robbins**.

[8*a*. Seminary. The History of Herodotus. Continuation of Course 7*a*. Professor **Bonner**. Omitted in 1916-1917.]

[8*b*. Seminary in the Greek Comedy. Continuation of Course 7*b*. Professor **Bonner**. Omitted in 1916-1917.]

[8*c*. Seminary. The Tragedies of Sophocles. Continuation of Course 7*e*. Professor **Winter**. Omitted in 1916-1917.]

8*d*. Seminary in Euripides. Continuation of Course 7*d*. *Two hours.* Professor **Bonner**.

[11*b*. Plato's Republic. Introductory lectures, rapid reading, and interpretation. Studies in the philosophy of Plato. Professor **Winter**. Omitted in 1916-1917.]

[12*b*. Thucydides: the Sicilian Expedition. Dr. **Robbins**. Omitted in 1916-1917.]

15. The Bucolic Poets. Theocritus, Bion, and Moschus, with studies in history of pastoral poetry. *Three hours.* Professor **Bonner**.

20. Aristotle's *Poetics,* and Studies in Ancient Literary Criticism. *Two hours.* Professor **Winter**.

Hellenistic Greek

Students who wish to enter these courses are expected to have had Courses A and B in classical Greek. See the description above.

FIRST SEMESTER

1. Elementary Course. The Gospels according to Mark, Matthew, and Luke, with grammatical study of Hellenistic Greek. Students should provide themselves with one of the standard texts, such as Westcott and Hort, Nestlé, or Souter (Oxford text). *Three hours.* Dr. ROBBINS.

3. The Pauline Epistles. I and II Corinthians, Romans; reading and interpretation. *Two hours.* Dr. ROBBINS.

SECOND SEMESTER

2. The Acts of the Apostles and the Fourth Gospel. *Three hours.* Dr. ROBBINS.

   This course may be taken, if so desired, as two separate parts, viz., *2a,* The Acts of the Apostles, and *2b,* The Fourth Gospel.

4. The Pauline Epistles. Galatians I and II, Thessalonians, Ephesians. In place of one or two of the Epistles, the class may interpret selections from the works of the Apostolic Fathers, if such reading be preferred. *Two hours.* Dr. ROBBINS.

Greek Courses in English

The courses grouped under this head do not require a knowledge of the Greek language. They are intended for students who have not had time or opportunity to learn Greek, but wish to acquire some knowledge of Greek literature and life, and of the debt which modern civilization owes to the Greeks.

FIRST SEMESTER

16. Greek Literature in English. No knowledge of the Greek language is required for this course. The aim is to give students an acquaintance with the masterpieces of Greek literature from Homer to Theocritus through the medium of English translations. Lectures, assigned readings, and reports. *Three hours.* Professor WINTER.

[26. Greek Religion. Lectures, assigned readings, and reports. Professor BONNER.

This course does not require a knowledge of Greek, but students who have had adequate training in the Greek language may elect it as a three-hour course, the third hour (which will be arranged later, to be devoted to the study of selected subjects from the original sources. Omitted in 1916-1917.]

29. Ancient Greek Life. Dr. ROBBINS. Elect under Classical Art and Archæology, Course 4.

SECOND SEMESTER

10. The Greek Drama in English Translations. Lectures on the history, development, and influence of the Greek drama; assigned readings and reports. No knowledge of the Greek language is required for this course. *Three hours.* Professor BONNER.

14. Greek Mythology. Professor BONNER.
Elect under Classical Art and Archæology, Course 6.

28. Greek Political Institutions. Lectures, assigned readings, and reports. *Two hours.* Dr. ROBBINS.
This course does not require a knowledge of Greek; but advanced students who have some knowledge of the language may, by arrangement with the instructor, elect a third hour, which will be devoted to the study of the sources in the original.

30. Topography and Monuments of Ancient Athens. Illustrated lectures, and assigned readings. Professor WINTER. Elect under Classical Art and Archæology, Course 8.

JOURNAL CLUB

Analysis and criticism of important articles in the domain of Greek and Latin languages and literatures, Greek and Latin grammar and lexicography, Greek and Roman history, archæology, and antiquities, by members of the classical faculty, and the Greek and Latin seminaries. Fortnightly, throughout the year.

LATIN LANGUAGE AND LITERATURE

Students especially interested in language study are advised to elect two foreign languages in the freshman year. Two new languages, however, should not be begun at the same time. Suggestions with reference to the grouping of language courses are given on page 137.

Courses A and B are designed for students entering with two units in Latin, and should be elected in the first year. A credit of four hours is given for each course.

Students entering with four units in Latin should elect Courses 1 (or 1*a*) and 2 in the first year, and 3 and 4 in the second year. Course 6*a* is also open to second year students.

Third year students may elect from Courses 7, 7*a*, 7*c*, 10, 11, 12, 14, 14*a*, and 16*a*.

In order to increase the range of work offered to advanced students, several of the courses in Latin are given in alternate years, new courses being introduced as opportunity is thus afforded.

Students who are preparing to teach Latin are recommended to take Courses 7, 10, 11, 12, 21, 21*a*, 22, and 22*a*. It is advised that they complete at least Courses 1 and 2 in Greek, either having presented two units of Greek for admission and having taken Courses 1 and 2 as regular freshman work, or if Greek be not presented for admission, having completed Courses A and B as well as 1 and 2 in the University.

Courses 1, 1*a*, 2, 3, 4, 4*a*, 4*b*, 4*c*, 6*a*, 7*a*, are intended primarily for undergraduates. Courses 5*f*, 6*g*, 7, 7*b*, 8, 10*a*, 11, 12, 13, 13*a*, 14, 14*a*, 15, 16, 16*a*, 18, 20, 21, 21*c*, and 22 are for graduates and undergraduates. Courses 18*b*, 24, 25, 26, 27, 28, and 31 are exclusively for graduates.

Consultation Hours. — The instructors in the department will have consultation hours as follows:

During registration week, September 27 to October 4, Professor CRITTENDEN, daily from 10 to 12. Room 103, U. H.

Throughout the year,

Professor KELSEY, *Tu, Th,* at 9, *W, F,* at 10. Memorial Hall.
Professor MEADER, *Tu, Th,* at 11. Room 105, M. H.
Professor WINTER, *Tu, Th,* at 11. Room 107, T. H.
Professor CRITTENDEN, *Tu, Th,* at 3. Room 103, U. H.

FIRST SEMESTER

Y. Elementary Preparatory Latin. This course, and Course Z, running throughout the year, cover the first two units of the entrance requirements in Latin. Successful completion of the courses entitles the student to two units for admission; but no college credit is given. A fee of $10 is charged for each semester.

In case the number applying for the course justifies it, two sections will be formed; one for dental students only, the other for all other students. Dr. BUTLER.

B1. Virgil, *Aeneid.* Translation and interpretation, metrical reading and studies in Greek and Roman mythology. *Four hours.* Professor CRITTENDEN.

B2. Selections from the Roman Law. Reading and interpretation of passages from Gaius and Justinian. This course is open to students who have had two years of high school Latin. It is especially designed for prospective students of law and legal institutions. *Four hours.* Professor CRITTENDEN.

1. Cicero, Essays. *De Senectute, De Amicitia;* Selections from Catullus; Latin Writing. *Four hours.* Three sections. Professors WINTER and CRITTENDEN.

1*a*. Scientific Latin. Reading and interpretation of selected passages from Pliny's *Natural History,* Seneca: *Naturales Quaestiones,* Celsus: *De Medicina,* etc. Studies in the terminology of Law, Medicine, Dentistry, and the sciences, as derived from Latin and Greek. *Four hours.* Professor CRITTENDEN.

This course is designed for students who can give but one year to college Latin, and who wish to make the results of their previous study of the subject directly applicable in the professions or in scientific work. Four years of high school Latin (or two years in high school and Courses A and B in the University) are prerequisite. If desired, one-half the work may be elected as a two hour course, either

1*b*. Scientific Latin, Reading. *Two hours,* or

1*c*. Scientific Terminology. *Two hours.*

3. Horace. Selections from the *Odes, Satires,* and *Epistles. Four hours.* Two sections. Professors KELSEY and MEADER.

These sections may also be elected as *three hour* courses, 3*a*.

[5*f*. General Linguistics. A general introduction to the science of language. Professor MEADER.

This course should be elected as General Linguistics and Comparative Philology, 5*f*. Omitted in 1916-1917.]

6*a*. Roman Comedy. Selected plays of Plautus and Terence. *Two hours.* Professor WINTER.

7. Roman Political Institutions. *Two hours.* Professor SANDERS.

11. Latin Writing. *Two hours.* Two sections. Professors SANDERS and MEADER.

Course 11 is introductory to Course 12. The principal aim is to secure correctness of expression and a feeling for idiom. The course may profitably be taken by students whose work in the Latin writing of Course 1 has been of a high grade.

13. Juvenal. Interpretations and lectures. *Two hours.* Professor KELSEY.

14. Tibullus and Propertius. Interpretations, with lectures on the Roman elegy. *Two hours.* Professor SANDERS.

[14*a*. Catullus and Martial. Interpretations and lectures. Professor SANDERS. Omitted in 1916-1917.]

15. Introduction to Latin Palæography. *Two hours.* Professor SANDERS.

Lectures on the various styles of writing found in Latin manuscripts, with exercises in reading from facsimiles.

21. Teachers' Course. Interpretation of Cæsar's *Gallic War,* with studies in the syntax and military antiquities. *Two hours.* Professor KELSEY.

Courses 21, 21*a,* and 21*b,* are open only to those who receive special permission. Those who elect Course 21 are required to elect also 21*a*.

21*a*. Teachers' Course. Lectures on the *Gallic War*. *One hour.* Professor KELSEY.

21*b*. Studies in Cæsar. Consultation. Professor KELSEY. No credit is given for this course.

25. Reports on the Progress of Research. Analysis and criticism of important articles in the domain of the Latin and Greek languages and literatures, Latin and Greek grammar and lexicology, Greek and Roman history, archæology, and antiquities, by members of the classical faculty and members of the Latin and Greek Seminaries.

27. Seminary. Studies in Propertius. *Two hours.* Professor KELSEY.

Course 27 is open to graduate students only.

SECOND SEMESTER

Z. Elementary Preparatory Latin. Courses Y and Z, running throughout the year, cover the first two units of the entrance requirement in Latin. Successful completion of the courses entitles the student to two units for admission; but no college credit is given. A fee of $10 is charged for each semester. Dr. BUTLER.

A. Cicero, Selected Orations. With comparison of ancient and modern oratory, and collateral work in Roman history and government. *Four hours.* Professor CRITTENDEN.

2. Livy, Book I or XXI. Plautus. Terence. *Four hours.* Three sections. Professors WINTER and CRITTENDEN.

4. History of Roman Literature. *Four hours.* Two sections. Professors KELSEY and MEADER.

4*a*. General Course in Roman Literature. *Two hours.* Two sections. Professors KELSEY and MEADER.

This course is designed for students interested in the general subject of literature, who do not wish to make an intensive study of Latin. No knowledge of Latin is required. The Roman literature will be treated in its broad relation to the Greek literature and to modern literature.

4*b*. The *Letters* of Pliny the Younger. Interpretation of selected letters, with a study of Roman literary and social conditions at the end of the first century, A. D. *Two hours.* Professor SANDERS.

6*g*. Comparative Philology. A general introduction to comparative Indo-European philology. Professor MEADER.

This course should be elected as General Linguistics and Comparative Philology, 6*g*.

[7*a*. Tacitus, *Agricola, Germania* and selections. Interpretations and lectures. Professor WINTER. Omitted in 1916-1917.]

7*b*. Proseminary in Roman Political Institutions. Studies in the Imperial Period. *One hour.* Professor SANDERS.

Graduate students will take this as a *two hour* course 7*d*.

7*c*. Tacitus, *Histories*. Interpretations and lectures. *Two hours.* Professor WINTER.

[7*e*. The Annals of Tacitus. Interpretations and lectures. Professor WINTER. Omitted in 1916-1917.]

8. Roman Law. See Courses in Roman Law and Jurisprudence.

10*a*. The Topography and Monuments of Ancient Rome. Professor KELSEY. Elect under Classical Art and Archæology, Course 2*a*.

12. Latin Writing. Advanced Course. *Two hours.* Two sections. Professors SANDERS and MEADER.

In Course 12, attention is given not only to correctness of expression, but also to matters of style and the finer distinctions of the language. It is limited to those whose work in Course 11 has been of a high grade.

16. Latin Inscriptions. *Credit to be arranged.* Professor KELSEY.

Reading of inscriptions of different periods from the De Criscio collection and from reproductions. Interpretation of selected inscriptions.

16*a*. The *Letters* of Cicero.

Interpretation of selected letters, with a study of Roman manners and political conditions at the end of the Republic. *Two hours.* Professor SANDERS.

18. Lectures on the Latin Language. *Two hours.* Professor MEADER.

The object of this course is to give the student a scientific basis for the study and teaching of the Latin language. The subjects treated will be: the history of the Latin sounds and inflections; the forms and meanings of the more important syntactical types; Latin word formation.

[18*b*. The Italic Dialects. *Two hours.* Professor MEADER.

Lectures and recitations on the phonology, morphology, and syntax of Oscan and Umbrian. Interpretation of inscriptions. Omitted in 1916-1917.]

22. Teachers' Course. Virgil. *Two hours.* Professor KELSEY.

Students are required to combine 22*a* with 22.

22*a*. Teachers' Course. Lectures on Virgil. *One hour.* Professor KELSEY.

22*b*. Studies in Virgil. Consultation. Professor KELSEY. No credit is given for this course.

24. Reviews in Roman Literature. *One hour.* Professors SANDERS, MEADER, and KELSEY.

Students who are candidates for advanced degrees in these subjects will be given systematic reviews of them during the second semester.

26. Reports on the Progress of Research. Continuation of Course 25.

28. Seminary. Propertius. Continuation of Course 27. *Two hours.* Professor SANDERS.

Course 28 is open to graduate students only.

31. Lectures on the Sources of Roman Historians. *Two hours.* Professor SANDERS.

The chief historians, their methods of work, their interrelationships, and final indebtedness to tradition, historical records, or their own memories, will be discussed. Incidentally the historical foundation of much in Roman history will be touched upon. This course is intended primarily for advanced students in Latin and teachers of ancient history.

CLASSICAL ARCHAEOLOGY

The following courses do not require a knowledge of Greek or of Latin. The large collection of lantern slides and photographs owned by the University makes it possible to illustrate all these courses fully. The collection of casts of ancient sculpture in the Art Gallery is also utilized in the courses in ancient art. A more complete statement of the material at hand for the study of Roman Archæology is given under the department of Latin.

For courses in Greek and Roman Art, formerly announced here, see the department of Fine Arts.

FIRST SEMESTER

[3. The Private Life of the Romans. *One hour.* Mr. ———— Omitted in 1916-1917.]

4. Ancient Greek Life. *Two hours.* Dr. ROBBINS.

Lectures, illustrated with stereopticon; assigned readings.

SECOND SEMESTER

2*a*. Monumental History of the City of Rome. A survey of the monuments of art of different periods, with special study of the Forum, the Imperial palaces, and other topographical groups of special importance. Lectures, illustrated. *Three hours.* Professor KELSEY.

6. Greek Mythology. *One hour.* Professor BONNER.
Illustrated lectures and assigned readings. Classical myths will be treated with special reference to their influence on modern literature.
Students may enter this course after the first week of the semester only by special permission of the instructor.

8. Topography and Monuments of Ancient Athens. Illustrated lectures and assigned readings. *Two hours.* Professor WINTER.

GENERAL LINGUISTICS AND COMPARATIVE PHILOLOGY

The courses announced below are designed for students of both ancient and modern languages. They aim to familiarize the students with the general principles and methods of the Science of Language and to present the most important facts in the life and growth of language. Attention is called to the various courses in Psychology.

FIRST SEMESTER

5*f*. Principles of Linguistic Science. *Two hours.* Professor MEADER.
This course aims to give a broad general foundation, such as will enable the student or teacher to judge intelligently of the nature of specific phenomena. Among the questions treated will be: the relation of psychology to linguistic science; the nature of language; speech sounds and their changes; changes in the meanings of words; discussion of grammatical categories (noun, verb, mood, etc.); classification of languages; the genesis of speech. Lectures and recitations.

7. Special Problems in Comparative Philology. *One hour.* Professor MEADER.

[26. The Psychology of Language. *Two hours.*
Among the subjects treated are: The Laws of thought and language, the history of linguistic theory, language as a form of expression, the genesis of speech, and the psychology of syntax. Lectures and discussions. Professors PILLSBURY and MEADER.
Professor SCOTT will give four lectures on the genesis of speech. Omitted in 1916-1917.]

SECOND SEMESTER

2. Etymology and Semantics. Primarily for graduates. *Credit to be arranged.* Professor MEADER.

6*g*. Comparative Philology. Lectures and recitations. *Two hours.* Professor MEADER.
A general introduction to comparative Indo-European philology. Study of the chief characteristics of the Indo-European lan-

guages, their relationships and classification, the origin and development of their sounds and inflections, accent and vowel gradation, comparative syntax.

[26*c*. General Course in Experimental Phonetics. Lectures and laboratory work. This course, which is designed for students of psychology, language, oratory, and music, will deal with the anatomy and physiology of the human voice, the production of speech sounds, description and classification of sounds, mechanical methods of recording speech sounds, study of speech records. As the number of students admitted to this course will be limited, those desiring to elect it are advised to apply early to one of the instructors in charge. *One hour.* Professors MEADER and SHEPARD. Omitted in 1916-1917.]

SANSKRIT

The study of Sanskrit is of value to students of the Indo-European (1) languages, (2) literatures, (3) philosophy and religion, (4) social institutions, and (5) for those preparing to do missionary work in India. The courses offered below are designed especially for students of the languages, ancient and modern, and are adjusted to the needs of those preparing to teach. They are correlated with the courses in Comparative Philology, but individual aid and direction will be given to any who wish to devote themselves to other aspects of the study.

Before beginning the study of Sanskrit, the student should have pursued courses in one of the three subjects, Greek, Latin, and German, or in lieu of German some one of the other Teutonic languages or a Slavonic language, for at least four semesters.

FIRST SEMESTER

1. Beginners' Course. Grammar, and exercises in translation and composition. Text-books: Whitney's *Grammar* or Thumb's *Handbuch des Sanskrit* and Lanman's *Sanskrit Reader*. *Two hours.* Professor MEADER.

[3. Advanced Reading: Kalidasa's *Cakuntala*. Elements of Prakrit. *One hour.* Professor MEADER. Omitted 1916-1917.]

[3*a*. Rapid Reading of Easy Sanskrit. *One* or *two hours, to be arranged.* Professor MEADER. Omitted 1916-1917.]

SECOND SEMESTER

2. Interpretation of selections contained in Lanman's *Sanskrit Reader,* with elementary studies in the comparative morphology of the more important cognate languages. *Two hours.* Professor MEADER.

[4. Advanced Reading. Selections from the *Vedas.* *One hour.* Professor MEADER. Omitted 1916-1917.]

OLD BULGARIAN

FIRST SEMESTER

1. Beginners' Course. *Two hours.* Professor **Meader.**
   This course is designed for students interested either in Slavonics or in Indo-European comparative philology.

RUSSIAN

In consequence of the increasing importance of Russia in intellectual, political, and commercial activities, a practical acquaintance with the Russian language is rapidly becoming a necessity for English-speaking peoples. The courses offered below are especially designed for students interested in Russian literature, historical sources, and commercial affairs, and Indo-European Comparative Philology, and for those who are preparing to enter the diplomatic service.

FIRST SEMESTER

1. Beginners' Course. Elements of the language. Selected readings from Tolstoi will serve as the basis of the work. *Three hours.* Professor **Meader.**

3. Advanced Russian. Gogol and Tolstoi. *One or two hours.* Professor **Meader.**

8. Russian Literature in English. No knowledge of the Russian language is required. Courses 8 and 9 are continuous in character and should be elected consecutively, as each is essential to the understanding of the other. They are designed for those who desire to pursue the study of the literature under the guidance of an instructor, without devoting time previously to the acquisition of the language. The courses deal mainly with the Age of Catharine, Pushkin, Gogol, Dostoevski, Turgenev, Tolstoi, Nekrasov, Chekhov, Gorki, and Andreev.
   Lectures and assigned readings. *Two hours.* Professor **Meader.**

SECOND SEMESTER

2. Continuation of Course 1. Readings from Pushkin, Lermontov, Turgenev, and Tolstoi. *Three hours.* Professor **Meader.**

9. Continuation of Course 8. *Two hours.* Professor **Meader.**

11. Interrelations of Russian and Western European Literature. *Two hours.* Professor **Meader.**
    Courses 8*a* and 11 must be preceded by 8 and 9, or an equivalent. They provide an opportunity for more detailed study of some of the problems treated in Courses 8 and 9.

SEMITICS, INCLUDING STUDIES IN THE ENGLISH BIBLE AND THE HISTORY OF RELIGIONS

The Courses in Semitics are intended: (1) For students who are seeking a liberal culture; (2) for students of classical and modern languages to furnish them with necessary data for the study of the philosophy of language and phonetic laws; (3) for students who wish to make a special study of Semitics (the courses lead to the degree of Doctor of Philosophy; (4) for students of ancient history; (5) for students of art and archæology; (6) for students of ethics and theology; (7) for students who expect to enter upon missionary service in the orient.

Students who intend to pursue theological studies are advised to consult the head of the department as to the lines of study which may be pursued with greatest advantage in connection with Semitics, and as a preparation for the work of the theological seminary.

Students may begin the study of Hebrew in their sophomore year, *and those who intend to enter a theological seminary,* or make a special study of Semitics, are advised to begin early in their course.

Students who have taken Hebrew and Hellenistic (New Testament) Greek for four semesters, are allowed special privileges in several of the theological seminaries. *Note the following:*—

(1) They may graduate in two years, thus saving a whole year, or,

(2) They are permitted to enter upon advanced courses for which they would not, otherwise, be prepared. They are thus enabled to gain a commanding knowledge of the *Literature of the Bible* which is impossible to students who are compelled to spend a large portion of their junior and middle years in the seminary in the purely academic work of learning languages, and, further, are enabled to enter into competition for the large fellowships offered by the seminaries for foreign study.

Consultation Hours.—September 26 to October 3, 10-12, Room 201, M. H.; during the semester, *Tu, Th,* at 11. Room 201, M. H.

The courses in Hellenistic (New Testament) Greek, formerly given in the department of Semitics, will now be found in the department of Greek.

Hebrew

FIRST SEMESTER

1. Course for Beginners. Grammar and easy reading. *Three hours.* Professor WATERMAN.

3. Intermediate Hebrew. Critical reading of the books of Samuel and Kings. *Two hours.* Professor WATERMAN.

SECOND SEMESTER

2. Continuation of Course 1. Reading of selections from Genesis; grammar and Hebrew prose writing. *Three hours.* Professor WATERMAN.

4. Continuation of Course 3. Isaiah, Chaps. 40-55, and selections from the Minor Prophets. A critical reading of the prophecies in Hebrew, with an interpretation of them in the historical light of their times. *Two hours.* Professor WATERMAN.

Assyrian

[5. Course for Beginners. *Three hours.* Professor WATERMAN. Omitted in 1916-1917.]

Aramaic

[7. Grammar and Reading of the Aramaic parts of the Old Testament (Dan. 2:4-7:28; Ezra 4:8-6:18 and 7:12-26). *Three hours.* Professor WATERMAN. Omitted 1916-1917).

Arabic

9. Course for Beginners. Grammar and easy reading. *Three hours.* Professor WATERMAN.

Semitic History and Literature

FIRST SEMESTER

[11. A Historical Survey of the Semitic Orient from Prehistoric Times to 1200 B. C. *Three hours.* Professor WATERMAN. Omitted in 1916-1917.]

13. Introduction to the Literature of the Old Testament. A critical inquiry concerning the Old Testament documents, including the Apocrypha. Special attention is given to the value of the writings for historical study and to their place in the development of religion. *Two hours.* Professor WATERMAN.

17. Israelitish History and Prophecy.—This course will deal with the developments and the mutual relations of history and prophecy in the great creative period of Israel's religion, from the 9th to the 7th century B. C. *Two hours.* Professor WATERMAN.

SECOND SEMESTER

[12. The History of Israel. This course will cover Israelitish development from 1200 B. C. to the fall of Jerusalem 70 A. D. *Two hours.* Professor WATERMAN. Omitted 1916-1917.]

14. Biblical Introduction. Continuation of Course 13. *Two hours.* Professor WATERMAN.

18. The Bible as Literature. This course will consist of a critical study of the chief literary masterpieces of the Bible, from the literary standpoint, as contributions to world literature. Particular attention will be given to the Book of Job, The Psalms and examples of Hebrew poetry and oratory as exemplified in the prophets. The American Revised Version will constitute the text-book. *Two hours.* Professor WATERMAN.

The History of Religions

FIRST SEMESTER

15. The Religions of the Semites. A survey of the religions of Babylonia, (Egypt), Palestine, and Arabia, in their mutual relations. *Two hours.* Professor WATERMAN.

SECOND SEMESTER

16. The Ethnic Faiths. A general survey of the great living Ethnic Faiths of India, Persia, China, and Japan. *Two hours.* Professor WATERMAN.

ROMANCE LANGUAGES AND LITERATURES

French

Students especially interested in language study are advised to elect two foreign languages in the freshman year. Two new languages, however, should not be begun at the same time. See page 137.

Courses 1, 2, 3, 4, must precede all others. Students in these courses are expected to remain in the same section throughout the year, and should choose their section accordingly. Students intending to enter upon the study of French at any point of their course will find it greatly to their advantage to do so in their first year.

Students who have had one year of French in preparation for the University should elect Course 2; those who have had three years should elect Course 4.

Students desiring to become teachers of French should consult Professor CANFIELD as soon as possible. Only students who have marked linguistic ability are encouraged to prepare themselves for teaching, and no student who has not been more than ordinarily successful in his work in the department, and acquired more than an average proficiency, will be recommended.

Members of the staff may be consulted by students concerning the arrangement of their work, from September 27 to October 4, inclusive as follows:

Professor CANFIELD, at 1:30 P. M., in Room 104, S. W.
Professor LEVI, from 10 to 12, in Room 200, S. W.
Professor EFFINGER, in the Dean's office.
Professor THIEME, from 10 to 12, in Room 300, S. W.
Professor WAGNER, from 10 to 12, in Room 203, S. W.

FIRST SEMESTER

Primarily for Undergraduates.

1. Elementary Course. Grammar and easy reading, with practice in speaking. *Four hours.* Twelve sections. Professors LEVI and THIEME, Assistant Professor MCLAUGHLIN, Dr. AUSTIN, Mr. WANN, Mr. BURSLEY, Mr. HAGER, and Mr. BARNETT.
No credit toward graduation is counted for this course until Course 2 is satisfactorily completed.

2. Elementary French. Continuation of Course 1. For those who have had Course 1, or one year of French in the high school. *Four hours.* Two sections. Mr. BARNETT and Mr. SMITH.

3. Elementary French of the second year. May be taken as 3, *four hours,* or 3*a, five hours.*

3. Modern prose and plays, with practice in speaking and writing. *Four hours.* Six sections. Professor LEVI, Assistant Professor MCLAUGHLIN, Dr. AUSTIN, Mr. WANN, Mr. BURSLEY, and Mr. SMITH.

3*a*. Modern prose and plays, with special emphasis on speaking and writing. *Five hours.* Professor CANFIELD.
Recommended for those who expect to specialize in French.

4. Modern prose and plays. Continuation of Course 3. For those who have taken Course 3, or three years of French in the high school. *Four hours.* Assistant Professor MCLAUGHLIN.

5. Introduction to French Literature. Representative authors of various periods. *Three hours.* Three sections. Professors CANFIELD, LEVI, and THIEME.
This course is a prerequisite to all advanced courses in French literature.

7. Composition. Must accompany Course 5 or have been preceded by it. *Two hours.* Two sections. Professor THIEME and Mr. WANN.

[9. French Society and Culture in the Sixteenth, Seventeenth, and Eighteenth Centuries. A survey of the principal factors that contributed to the formation, development, and decay of the classical ideal in French literature. Professor THIEME. Omitted in 1916-1917.]

9*a*. The Literature of the Sixteenth Century. *Three hours.* Professor THIEME.

[11. Voltaire. Reading of selected works, lectures, and reports. Professor CANFIELD. Omitted in 1916-1917.]

11*a*. Victor Hugo. A study of his poetry and dramatic works, with special reference to the literary movement of the nineteenth century. Lectures, reports, and discussions. *Three hours.* Professor CANFIELD.

13. Conversation. These courses are intended to accompany and supplement the other courses. *One hour credit.*

13*a*. Open to students taking Courses 3 or 4. Mr. WANN.

13*b*. Open to students taking Courses 5, 7, 9, or 11. Mr. WANN.

15. Advanced French Composition. Practice in writing idiomatic French. Professor THIEME.

For Undergraduates and Graduates.

17. The Dramatic Literature of the Eighteenth Century. A study of the dramatic work of LeSage, Marivaux, Crébillon, Voltaire, Diderot, Nivelle de la Chaussée, Beaumarchais, and the minor dramatic authors of the time with reference to the evolution of dramatic form. Lectures in French, with assigned readings and reports. *Two hours.* Professor EFFINGER.

19. Contemporary France. French government and political institutions; political parties; social and religious conditions; industries; literature, art, science and education. *Two hours.* Assistant Professor MCLAUGHLIN.

This course is intended to give such a knowledge of the French people of today as will enable one to interpret intelligently the events involving France reported in the current news of the world. Recommended specially for students of journalism.

[21. Poetry of the Nineteenth Century.

This course deals with the main aspects of poetry in France from the beginnings of Romanticism to the present time. The chief and representative poets are studied in connection with the currents of thought of the time. Lectures, reading, and discussions. Assistant Professor TALAMON. Omitted in 1916-1917.]

25. The History of French Literature from its beginnings to the Renaissance. *Two hours.* Dr. AUSTIN.

This course aims to give the student some acquaintance with the main and characteristic forms of the literature of the Middle Ages, and of the movement of ideas that found expression in it.

27. Molière. A careful study of his comedies. Readings, lectures and reports. *Two hours.* Professor LEVI.

28*a*. French Reading for students of Biology. Elect as Zoology, Course 28, and Botany, Course 29.

Primarily for Graduates.

29. Proseminary in French Literature. *Two hours.* Professor CANFIELD.
The work will consist in special studies connected with the works of early Romanticism. In 1916-1917 the literature of the first Empire, 1804-1815, will be the subject of study.

31. Historical French Grammar, I. Phonology. Lectures, with illustrative Old French readings. *Two hours.* Assistant Professor MCLAUGHLIN.

33. Introduction to Old French Literature. Reading of selected texts and lectures. *Two hours.* Assistant Professor ADAMS.

35. French Versification. A critical and historical study of French verse structure from its origin to the present. *Two hours.* Professor THIEME.

37. Journal Club. Review of results of current research in the field of the Romance languages and literatures, by the instructors of the department and advanced students. Every third week.

39. Old Provençal. Outline of the grammar, with readings. *Two hours.* Assistant Professor ADAMS.

SECOND SEMESTER

Primarily for Undergraduates.

1. Elementary Course. Grammar and easy reading, with practice in speaking. *Four hours.* Mr. BARNETT.
No credit toward graduation is counted for this course until Course 2 is satisfactorily complete.

2. Elementary Course continued. Reading of modern prose and plays, with practice in speaking and composition. *Four hours.* Twelve sections. Professors LEVI and THIEME, Assistant Professor MCLAUGHLIN, Dr. AUSTIN, Mr. WANN, Mr. BURSLEY, Mr. HAGER, and Mr. BARNETT.

3. Elementary French. Continuation of Course 2; also for students who have had two years of French in the high school. *Four hours.* Two sections. Mr. BARNETT and Mr. SMITH.

4. Elementary French of the second year. May be taken as 4, *four hours,* or 4a, *five hours.*

4. Modern prose and plays, with practice in speaking and writing. *Four hours.* Five sections. Professor LEVI, Assistant Professor MCLAUGHLIN, Dr. AUSTIN, Mr. WANN, and Mr. BURSLEY.

4a. Modern prose and plays, with special emphasis on speaking and writing. *Five hours.* Professor CANFIELD.

5a. Continuation of Course 4. *Four hours.* Assistant Professor McLAUGHLIN.

6. Introduction to French Literature. Continuation of Course 5. *Three hours.* Three sections. Professors CANFIELD, LEVI, and THIEME.

This course is a prerequisite to all advanced courses in French literature.

8. Composition. Continuation of Course 7. Must accompany Course 6 or have been preceded by it. *Two hours.* Two sections. Professor THIEME and Mr. WANN.

[10. Continuation of Course 9. French Society and Culture in the Sixteenth, Seventeenth, and Eighteenth Centuries. Professor THIEME. Omitted in 1916-1917.]

10a. French Literature in the Sixteenth Century. Continuation of Course 9a. *Three hours.* Professor THIEME.

[12. Rousseau. Reading of selected works, lectures, reports. Professor CANFIELD. Omitted in 1916-1917.]

12a. Balzac. A study of the *Comédie humaine,* with special reference to the beginning and growth of the novel of realism in the nineteenth century. Lectures, reports, and discussions. *Three hours.* Professor CANFIELD.

14. Conversation. These courses are intended to accompany and supplement the other courses. *One hour credit.*

14a. Open to students taking Course 4 or 5a. Mr. WANN.

14b. Open to students taking Courses 6, 8, 10, or 12. Mr. WANN.

16. Advanced French Composition. Continuation of Course 15. May also be elected by properly qualified students who have not taken Course 15, after consultation with instructor. Professor THIEME.

For Graduates and Undergraduates.

18. The Dramatic Literature of the Nineteenth Century. The Melodramas of Pixérécourt; the Romantic drama; Scribe; the classical reaction; Dumas fils, Augier, Henri Becque, and the modern school. Lectures in French, with assigned readings and reports. *Two hours.* Professor EFFINGER.

20. Contemporary France. Continuation of Course 19. *Two hours.* Assistant Professor McLAUGHLIN.

[22. The Poetry of the Nineteenth Century. Continuation of Course 21. Assistant Professor TALAMON. Omitted in 1916-1917.]

26. The History of French Literature from its beginnings to the Renaissance. Continuation of Course 25. *Two hours.* Dr. AUSTIN.

28. The Works of Edmond Rostand, with special reference to *Chantecler.* *Two hours.* Professor LEVI.

Primarily for Graduates.

30. Proseminary in French Literature. Continuation of Course 29. *Two hours, to be arranged.* Professor CANFIELD.

32. Historical French Grammar, II. Morphology. Lectures and readings. *Two hours.* Assistant Professor McLAUGHLIN.

34. Introduction to Old French Literature. Continuation of Course 33. *Two hours.* Assistant Professor ADAMS.

40. Provençal. Continuation of Course 39. *Two hours.* Assistant Professor ADAMS.

Italian

FIRST SEMESTER

1. Italian Grammar. Easy Prose. *Three hours.* Dr. AUSTIN. No credit towards graduation is counted for this course until Course 2 is satisfactorily completed.

3. Dante. *La Vita Nuova* and *La Divina Commedia.* Lectures and recitations. *Two hours.* Dr. AUSTIN.

5. Origins of Italian Literature. Course primarily for graduates. *Two hours.* Dr. AUSTIN.

SECOND SEMESTER

2. Continuation of Course 1. Modern readings. *Three hours.* Dr. AUSTIN.

4. Dante. *La Divina Commedia.* Continuation of Course 3. Lectures and recitations. *Two hours.* Dr. AUSTIN.

6. Origins of Italian Literature. Continuation of Course 5. *Two hours.* Dr. AUSTIN.

Spanish

Students especially interested in the study of language are advised to elect two foreign languages in the freshman year. Two new languages, however, should not be begun at the same time. See page 137.

Courses 1 and 2 must precede all others. Students whose purpose in taking up Spanish is to acquire fluency in speaking and writing, should then take Courses 3, 4, 7, 8. Those desiring to acquire a knowledge of the literature of Spain should follow 1 and 2 by 3, 4, 5, 6, 9, 10, in this order.

Students who have had one year of Spanish in preparation for the University should enter Course 2.

FIRST SEMESTER

1. Elementary Course. Grammar, reading and oral work. *Four hours.* Twelve sections. Professors WAGNER and JOHNSON, Mr. BURSLEY, Mr. BONILLA, Mr. HERNANDEZ, Mr. DEL TORO, Mr. SCATORI, and Mr. GURROLA.

2. Elementary Course. Continuation of Course 1. *Four hours.* Two sections. Mr. DEL TORO and Mr. SCATORI.

3. Second Year. Composition, conversation and reading of selected texts. Each student taking these courses must select a Reading Section, and a Composition and Conversation Section, and these must not come on the same days. Partial credit will not be allowed. The courses may not be taken separately, except by special permission of Professor WAGNER.

3*a*. Reading Sections. *Two hours.* Six sections. Professors WAGNER and JOHNSON, and Mr. BURSLEY.

3*b*. Composition and Conversation Sections. *Two hours.* Twelve sections. Professor JOHNSON, Mr. BONILLA, Mr. HERNANDEZ, and Mr. DEL TORO.

4*b*. Business Spanish. Intended primarily for those students who completed Course 3 in the Spring or Summer of 1916. Such students may elect Course 4 in the second semester. *Two hours.* Mr. BONILLA.

5. The *Don Quixote.* The whole of this text is read in the class, and discussed in its relation to Spanish life and literature of the Golden Age. *Three hours.* Professor WAGNER.
Open to students who have completed Course 4 or the equivalent.

7. Advanced Practical Spanish. The course is conducted in Spanish. *Two hours.* Two sections. Mr. BONILLA.
Open to students who have completed Course 4 or an equivalent.

[9. The Drama of the Seventeenth Century. *Two hours.* Professor WAGNER.
Open to students who have completed Courses 5 and 6, or an equivalent. Omitted in 1916-1917.]

11. The Early Spanish Novel and its Influence in Europe *Two hours.* Professor WAGNER.
Primarily for graduates. May be elected only after consultation with the instructor.

13. General View of Spanish Literature. *One hour.* Professor WAGNER.
Primarily a graduate course. May be elected only after consultation with the instructor.

15. Old Spanish Grammar and Readings. *One hour.* Professor WAGNER.
Primarily a graduate course. May be elected only after consultation with the instructor.

SECOND SEMESTER

1. Elementary Course. Grammar, reading, and oral work. *Four hours.* Two sections. Mr. DEL TORO and Mr. GURROLA.

2. Elementary Course. Continuation of Course 1. Reading of modern prose, with practice in speaking and writing. *Four hours.* Twelve sections. Professors WAGNER and JOHNSON, Mr. BURSLEY, Mr. BONILLA, Mr. HERNANDEZ, Mr. DEL TORO, Mr. SCATORI, and Mr. GURROLA.

3. Continuation of Course 2. *Four hours.* If desired by a sufficient number, this course will be arranged for.

4. Second Year. Continuation of Course 3. Each student taking these courses must select a Reading Section and a Composition and Conversation Section, and these must not come on the same days. Partial credit will not be allowed. The courses may not be taken separately except by special permission of Professor WAGNER.

4*a*. Reading Sections. *Two hours.* Six sections. Professors WAGNER and JOHNSON, and Mr. BURSLEY.

4*b*. Composition and Conversation Sections. *Two hours.* Twelve sections. Professor JOHNSON, Mr. BONILLA, Mr. HERNANDEZ, and Mr. DEL TORO.

4*b*. Business Spanish. Repetition of Course 4*b* of the first semester. *Two hours.* Mr. BONILLA.

6. The *Don Quixote.* Continuation of Course 5. *Three hours.* Professor WAGNER.

8. Advanced Practical Spanish. Continuation of Course 7. *Two hours.* Two sections. Mr. BONILLA.

[10. The Drama of the Seventeenth Century. Continuation of Course 9. *Two hours.* Professor WAGNER. Omitted in 1916-1917.]

12. The Early Spanish Novel. Continuation of Course 11. *Two hours.* Professor WAGNER.

14. General View of Spanish Literature. Continuation of Course 13. *One hour.* Professor WAGNER.

16. Old Spanish Grammar and Readings. Continuation of Course 15. *One hour.* Professor WAGNER.

GERMANIC LANGUAGES AND LITERATURES

German

Students especially interested in language study are advised to elect two foreign languages in the freshman year. Two new languages, however, should not be begun at the same time. See page 137.

Courses 1, 2, 3 and 4, or their equivalent, must precede all other courses in German. The work in these courses is laid out on the basis of an entire academic year, and it is expected that the student will not change instructor or section at the end of the first semester without consulting the head of the deparment. Students intending to begin the study of German in the University are strongly advised to do so in their first year.

The prerequisites for Courses 5-10 are specifically designated under the courses described.

All courses beyond 10 are advanced undergraduate and graduate courses.

Students who have had one year of German in the high school and wish to pursue the study in the University should elect Course 2.

Students who have had two years of German in the high school should elect Course 3, 3*a*, or 3*e*.

Students who have had three years of German in the high school should usually elect Course 4. In some cases, however, it may be advisable for them to elect Course 5*a* or some other third-year electives. All such students are therefore urged to consult the head of the department in regard to their elections in German.

Students who have had four years of German in the high school are strongly advised to elect Courses 5*a* and 5*b*.

Students intending to prepare themselves to teach German are strongly advised to elect Courses 5*a* and 6*a* and Courses 9, 10, 13, 14, 17 and 18. All such students are urged to consult Professor WINKLER (Room 203, U. H.) as soon as possible for the more careful adjustment of their work in German.

A course in the reading of German for students of Biology is announced under the head of Zoology, Course 28. Students wishing to elect this course should have completed Courses 3*e* and 4*e* or their equivalent.

For consultation hours of the various instructors see the bulletin boards at the doors of the German rooms.

Throughout registration week, September 27 to October 4, Professor WINKLER will be in Room 203, U. H., to advise students in regard to elections in German.

FIRST SEMESTER

Introductory Courses:—

1. Elementary Course. Pronunciation, grammar, easy readings, with practice in speaking and writing German. *Four hours.* Nine sections. Assistant Professor DIETERLE, Dr. WAHR, Dr. WEIGAND, Mr. FICKEN, and Mr. PETERSON.

   No credit toward graduation is counted for this course until Course 2 is satisfactorily completed.

2. Elementary Course. Continuation of Course 1. Grammar, descriptive prose, short stories, with practice in speaking and writing German. *Four hours.* Two sections. Dr. WAHR and Mr. PETERSON.

3. Modern Prose, narrative and dramatic, with practice in speaking and writing German. Reviews in German grammar. *Four hours.* Nine sections. Professors DIEKHOFF and HILDNER, Assistant Professors FLORER, EGGERT, SCHOLL, and DIETERLE, Dr. WAHR, Dr. WEIGAND, and Mr. FICKEN.

3*a*. Readings from Representative Modern Authors. *Four hours.* Assistant Professor SCHOLL.

This course is designed primarily for students who wish to acquire facility in reading modern German. Prerequisite: Two years of German in the high school or one year of German (Courses 1 and 2) in the University.

3*e*. Scientific German. *Four hours.* Two sections. Assistant Professor SCHOLL and Mr. FICKEN.

This course is designed especially for students who intend to enter the Medical School. Prerequisite: Two years of German in the high school or one year of German (Courses 1 and 2) in the University.

4. Selected Dramas from Lessing, Goethe, or Schiller, with collateral readings. Reviews in German grammar and practice in reading and writing German. *Four hours.* Mr. ———

Third-year Electives.

5*a*. Schiller's *Wallenstein* with collateral readings. *Three hours.* Professors WINKLER, BOUCKE, DIEKHOFF, and HILDNER, Assistant Professors FLORER and EGGERT.

Prerequisite: Courses 3 and 4, or their equivalent.

5*b*. Reviews in German Grammar and Exercises in Composition. *One hour.* Six sections. Assistant Professor FLORER and Dr. WEIGAND.
Prerequisite: Courses 3 and 4, or their equivalent.

7. Contemporary German Novels and Dramas.

7*a*. Contemporary German Novels: Sudermann, Frenssen, Otto Ernst, etc. Readings and discussions. *Two hours.* Assistant Professor FLORER.

7*b*. Contemporary German Dramas: Sudermann, Hauptmann, Heyse, etc. A general reading course. *Two hours.* Assistant Professor FLORER.
Prerequisite: Courses 3 and 4, or their equivalent.

7*b*. Scientific German. *Two hours.* Professor SCHOLL.
Prerequisite: Courses 3*e* and 4*e*, or their equivalent.

9. German Composition. *Two hours.* Four sections. Professor HILDNER, Assistant Professors EGGERT, SCHOLL, and DIETERLE.
Prerequisite: Courses 3 and 4, or their equivalent.

9*a*. Advanced German Composition. *Two hours.* Professor DIEKHOFF.
Only students who have successfully passed Courses 9 and 10, or their equivalent are eligible for this course.

9*b*. German Conversation. *Two hours.* Two sections. Mr. PETERSON.

9*c*. German Conversation. Advanced Course. *Two hours.* Two sections. Assistant Professor DIETERLE.
Students to be eligible for this course must have taken some third-year electives in German or their equivalent.

Advanced Courses:—

11. Teachers' Course. Practical work, and discussion on grammar, composition, and the reading material now used in the high schools. Intended primarily for seniors. *Two hours.* Professor HILDNER.

13. German Grammar. Phonology, Word Formation and Inflection. Text-book: DIEKHOFF, *The German Language*. Advanced course intended for undergraduates and graduates, particularly for prospective teachers of German. *Two hours.* Professor DIEKHOFF.

15. Goethe's *Faust*. Part I. Lectures and recitations. Thomas' edition. *Two hours.* Two sections. Professors WINKLER and BOUCKE.
Prerequisite: Some third-year electives, or their equivalent.

15*a*. Goethe. A comprehensive study of his representative works, his personality, and the evolution of his thought. Lectures, readings, and reports. Advanced course open to undergraduates and graduates. *Two hours.* Professor BOUCKE.

17. History of German Literature. From the earliest times to the end of the Middle Ages. Lectures and selected readings. Thomas' Anthology of German Literature. *Two hours.* Professor WINKLER.

Prerequisite: Some third-year electives or their equivalent.

19. The Beginnings of the Romantic Movement in Germany in its relation to German Classicism and to the social, political, and philosophical thought of the times. Advanced course open to undergraduates and graduates. *Two hours.* Professor WINKLER.

[19*a*. History of German Literature from 1848 to 1900. Lectures, discussions, and reports. Advanced course open to undergraduates and graduates. *Two hours.* Professor BOUCKE. Omitted in 1916-1917, to be given in 1917-1918.]

[21*a*. German Art and Culture of the Renaissance and the Age of Classicism (17th and 18th centuries). Advanced course open to undergraduates and graduates. Lectures, readings, and reports. *Two hours.* Professor BOUCKE. Omitted in 1916-1917.]

21*b*. Heinrich von Kleist. His life and works. Lectures, discussions, and reports on assigned topics. *Two hours.* Assistant Professor SCHOLL.

Prerequisite: Some third-year electives or their equivalent.

23. The Dramatic Works of Friedrich Hebbel. Lectures, discussions, and reports on assigned topics. *Two hours.* Professor HILDNER.

Prerequisite: Some third-year electives or their equivalent.

23*b*. Franz Grillparzer. His life and works. Lectures, discussions, and reports on assigned topics. *Two hours.* Assistant Professor EGGERT.

Prerequisite: Some third-year electives or their equivalent.

24. Studies in the History of the German Novel with special emphasis upon recent German Literature. Lectures, reports, and discussions. *Two hours.* Professor FLORER.

Prerequisite: Some third-year electives or their equivalent.

27. Introduction to Middle High German. Lectures and recitations. Paul's *Mittelhochdeutsche Grammatik* and Bachmann's *Mittelhochdeutsches Lesebuch.* Advanced course open to undergraduates and graduates. *Two hours.* Professor DIEKHOFF.

27*a*. Middle High German Literature. A survey of German Literature from 1100 to 1500. Golther, *Die deutsche Dichtung im Mittelalter.* Selected readings from the most important works of this period. Primarily for graduates. *Two hours.* Professor DIEKHOFF.

29. Old High German. Lectures and recitations based upon Braune's *Abriss der Althochdeutschen Grammatik* and reading of selections from Braune's *Althochdeutsches Lesebuch.* Primarily for graduates. *Two hours.* Professor DIEKHOFF.

39. Seminary in the German Classics. A comprehensive study of the lives and works of Schiller or Herder, with investigations of selected topics. Primarily for graduates. *Two hours.* Professor WINKLER.

39*a*. Heinrich Heine. A comprehensive study of his life and works. Lectures and reports on assigned topics. Primarily for graduates. *Two hours.* Professor BOUCKE.

[43. Seminary in the Storm and Stress Movement. *Two hours.* Professor HILDNER. Omitted in 1916-1917.]

45. The Literary Relations of England and Germany from 1700 to 1770. *Two hours.* Professor WINKLER. Primarily for graduates.

45*a*. The Growth of Realism in European Literature from 1750 to 1900. *Two hours.* Professor BOUCKE.

Lectures, readings, and reports. The work of the first term will consist chiefly in a comparative study of the Middle-Class Drama in its various types and modifications, down to the modern Problem-Play. For undergraduates and graduates.

SECOND SEMESTER

Introductory Courses:—

1. Elementary Course. Pronunciation, grammar, easy readings with practice in speaking and writing German. *Four hours* Mr. ————

No credit towards graduation is counted for this course until Course 2 is satisfactorily completed.

2. Elementary Course. Continuation of Course 1. Grammar, descriptive prose, short stories, with practice in speaking and writing German. *Four hours.* Nine sections. Assistant Professor DIETERLE, Dr. WAHR, Dr. WEIGAND, Mr. FICKEN, and Mr. PETERSON.

3. Modern Prose, narrative and dramatic, with practice in speaking and writing German. Reviews in German grammar. *Four hours. Two hours.* Dr. WAHR and Mr. PETERSON.

4. Selected Dramas from Lessing, Goethe, or Schiller. Reviews in German grammar and practice in reading and writing German. *Four hours.* Nine sections. Professors DIEKHOFF and HILDNER, Assistant Professors FLOREK, EGGERT, and DIETERLE, Dr. WAHR, Dr. WEIGAND, and Mr. FICKEN.

4*a*. German Prose. Readings from Representative Modern Authors. Continuation of Course 3*a*. *Four hours.* Assistant Professor SCHOLL.

4*e*. Scientific German. Continuation of Course 3*e*. *Four hours.* Two sections. Assistant Professor SCHOLL and Mr. FICKEN.

Third-Year Electives.

6*a*. Goethe's *Iphigenie* and Lessing's *Nathan der Weise,* with collateral readings. *Three hours.* Six sections. Professors WINKLER, BOUCKE, DIEKHOFF, and HILDNER, Assistant Professors FLORER and EGGERT.

Prerequisite: Courses 3, 4, 5 or their equivalent.

6*b*. Reviews in German Grammar and Exercises in Composition. Continuation of Course 5*b*. *One hour.* Six sections. Assistant Professor FLORER and Dr. WEIGAND.

8. Contemporary German Novels and Dramas. Continuation of Course 7.

8*a*. Contemporary German Novels. Sudermann, Frenssen, Rosegger, Ricarda Huch, etc. Readings and discussions. *Two hours.* Assistant Professor FLORER.

8*b*. Contemporary German Dramas. Hauptmann, Sudermann, etc. A general reading course. *Two hours.* Assistant Professor FLORER.

8*b*. Scientific German. Continuation of Course 7*b*. *Two hours.* Assistant Professor SCHOLL.

10. German Composition. Continuation of Course 9. *Two hours.* Four sections. Professor HILDNER, Assistant Professors EGGERT, SCHOLL, and DIETERLE.

10*a*. Advanced German Composition. Continuation of Course 9*a*. *Two hours.* Professor DIEKHOFF.

10*b*. German Conversation. Continuation of Course 9*b*. *Two hours.* Two sections. Mr. PETERSON.

10*c*. German Conversation. Advanced Course. Continuation of Course 9*c*. *Two hours.* Two sections. Assistant Professor DIETERLE.

Students to be eligible for this course must have taken some third-year electives in German or their equivalent.

Advanced Courses:—

12. Teachers' Course. Practical work, and discussions on grammar, composition, and reading material now used in the high schools. Intended primarily for seniors. *Two hours.* Professor HILDNER.

14. German Syntax. Continuation of Course 13. *Two hours.* Professor DIEKHOFF.

16. Goethe's *Faust,* Part II. Continuation of Course 15. Thomas' edition. *Two hours.* Two sections. Professors WINKLER and BOUCKE.

16*a*. Goethe. A comprehensive study of his representative works, his personality and the evolution of his thought. Continuation of Course 15*a*. Advanced course open to undergraduates and graduates. *Two hours.* Professor BOUCKE.

18. History of German Literature. From Luther to Lessing. Continuation of Course 17. Lectures and selected readings. Thomas' Anthology of German Literature. *Two hours.* Professor WINKLER.

20. History of the Younger Romantic Movement and *Das junge Deutschland.* Continuation of Course 19. Advanced course open to undergraduates and graduates. *Two hours.* Professor WINKLER.

[20*a*. History of German Literature from 1848 to 1900. Continuation of Course 19*a*. Lectures, reports, and discussions. Advanced course open to undergraduates and graduates. *Two hours.* Professor BOUCKE. Omitted in 1917-1918.]

[22*a*. German Art and Culture of the Nineteenth Century. Lectures, readings and reports. Continuation of Course 21*a*. *Two hours.* Omitted in 1916-1917.]

23*a*. The Dramatic Works of Friedrich Hebbel. Lectures and reports on assigned topics. Continuation of Course 23. *Two hours.* Professor HILDNER.

23*c*. Franz Grillparzer. His Life and Works. Lectures and reports on assigned topics. Continuation of Course 23*b*. *Two hours.* Assistant Professor EGGERT.

23*d*. Heinrich von Kleist. His Life and Works. Lectures, discussions, and reports on assigned topics. Continuation of Course 21*b*. *Two hours.* Assistant Professor SCHOLL.

24*a*. Studies in the History of the German Novel, with special emphasis upon recent German Literature. Continuation of Course 24. *Two hours.* Assistant Professor FLORER.

25*b*. Lessing's *Laokoon*. A study of Lessing's essay with comparison of the critiques of Herder and Goethe. *Two hours.* Professor HILDNER.

Prerequisites: Some electives in third-year German.

28. Introduction to Middle High German. Lectures and recitations. Continuation of Course 27. *Two hours.* Advanced course open to undergraduates and graduates. Professor DIEKHOFF.

28*a*. Middle High German Literature. A survey of German Literature from 1100 to 1500. Continuation of Course 27*a*. Primarily for graduates. *Two hours.* Professor DIEKHOFF.

30. Old High German. Readings from Otfrid's *Evangelienbuch*, and lectures on Old High German Literature. Primarily for graduates. Continuation of Course 29. *Two hours.* Professor DIEKHOFF.

40. Seminary in the German Classics. A comprehensive study of the life and works of Schiller or Herder with investigations of selected topics. Primarily for graduates. Continuation of Course 39. *Two hours.* Professor WINKLER.

40*a*. Heinrich Heine. A comprehensive study of his life and works. Lectures and reports on assigned topics. Professor BOUCKE.

[44. Proseminary in the Storm and Stress Movement. Professor HILDNER. *Two hours.* Primarily for graduates. Omitted in 1916-1917.]

46. The Faust Legend and Kindred Themes in European Literature. Professor WINKLER. *Two hours.* Primarily for graduates.

46*a*. The Growth of Realism in European Literatures from 1750 to 1900. *Two hours.* Professor BOUCKE.

The work of this course will be devoted to a comparative study of the Sentimental Novel of the 18th Century and its literary descendants down to 1880. Continuation of Course 45*a*. For undergraduates and graduates.

Journal Club:—

Current Literature on German Philology and Literature. Meetings of instructors and advanced students in the German department are held every three weeks throughout the academic year, at which reports are made on important recent contributions on German Philology and Literature.

Gothic

FIRST SEMESTER

1. Lectures on Phonology and Morphology and reading of the Gospels. Wright's *Primer of the Gothic Language.* Primarily for graduates. *Two hours.* Assistant Professor EGGERT.

SECOND SEMESTER

2. Epistles. Heyne's *Ulfilas.* *Two hours.* Assistant Professor EGGERT.

Scandinavian

FIRST SEMESTER

1. Scandinavian Literature in English. Lectures, readings, and reports based on English translations of Holberg, Hertz, Lie, Kielland, Björnsen, Strindberg, and Selma Lagerlöf. The relation of these writers to the larger European literary movements will be especially considered. *Two hours.* Professor BOUCKE.

SECOND SEMESTER

2. Henrik Ibsen. A comprehensive study of his works, his thought, and his influence upon the contemporary drama. Lectures, readings, and reports. *Two hours.* Professor BOUCKE.

Old Norse

[Old Icelandic. Introductory Course. Lectures and reading of selections from the sagas. Kahle's *Altisländisches Elementarbuch.* Primarily for graduates. *Two hours.* Assistant Professor EGGERT.

Omitted in 1916-1917, unless a sufficient number of students apply for the course.]

ENGLISH

Courses 11, 12, 14. 27, and 28 are conducted on the seminary plan, the class being divided into small sections for the presentation of theses and reports, and for extempore discussion and conference. These courses are designed for advanced students only, and are usually taken by students in their last year of residence at the University.

Courses 3, 3*c*, 5*a*, 5*b*, 7, 8, 9, 11, 12, 13, 13*a*, 14, 15, 15*a*, 17, 18, 18*a*, 19, 21, 21*a*, 22, 23, 26, 27, 28, and 30, will ordinarily be found suitable for graduate students as well as for undergraduates. In the case of students who have taken these courses for their first degree, special advanced courses are arranged for graduate study after conference with the candidate.

Courses 1 and 2 will satisfy the requirement in English in the literary-law curriculum and in the other combined curricula.

Consultation Hours.—During the registration period, September 27 to October 4, a departmental representative, daily at 4, Room 208, T. H.

During the first two weeks of the first semester Professor DEMMON will be in Room 208, T. H., at 4 P. M. each day to confer with students concerning their work. Hours for the remainder of the year will be posted later.

Professor STRAUSS—The first week of each semester: every day at 4. Room 209, T. H.

Professor TILLEY—Throughout the year: every day at 4. Room 206, T. H.

Professor MOORE—The first week of each semester: every day at 4. Room 206, T. H.

Assistant Professor HUMPHREYS—The first week of each semester: every day at 12. Room 206, T. H.

Assistant Professor GINGERICH—Throughout the year, *W, F,* at 4. Room 208, T. H.

FIRST SEMESTER

1. English Literature. Historical Outline, with assigned readings. *Three hours.* Nine sections. Professor TILLEY, Assistant Professors HUMPHREYS and GINGERICH, and Mr. RAYMOND.

3. Anglo-Saxon. *Three hours.* Professor MOORE.

This course aims to give a sense of the development and continuity of the English language, a knowledge of the elements of Anglo-Saxon grammar, some acquaintance with the literature, and a reading knowledge of West-Saxon prose.

3*c*. English Literature. Chaucer. *Three hours.* Professor MOORE.

After a careful study of the *Prologue,* with particular attention to Chaucer's language, students will go on to a more rapid reading of the *Canterbury Tales* and other works of Chaucer.

4. English Literature. Shakespeare. A critical reading of four representative plays. Lectures on the history of the text. *Two hours.* Two sections. Professor DEMMON.

Course 4 must be preceded by Courses 1 and 2 or an equivalent.

5*a*. The English Drama before Shakespeare. *Three hours.* Professor TILLEY.

Open to those who have had a course in Shakespeare.

6. English Literature. From Milton to Pope. *Three hours.* Assistant Professor HUMPHREYS.

7. History of the English Language. *Two hours.* Professor TILLEY.

Lectures on the most important factors in the history of the language, together with the investigation of the causes and process of certain changes of usage. Graduate students will elect this as a three hour course, the third hour to be arranged.

11. English Literature. Study of Masterpieces: Spenser's *Faery Queen;* Shakespeare's *Sonnets;* Milton's *Paradise Lost* and *Paradise Regained;* Dryden's *Satires;* Wordsworth's *Prelude* and *Excursion;* Tennyson's *Maud* and *Idylls of the King;* Browning's *The Ring and the Book. Two hours. Sections to be arranged.* Professors DEMMON and STRAUSS.

Open to seniors and graduate students. Graduate students may elect this course as *three hours.*

Each member of the class is expected (1) to present an essay upon an assigned masterpiece; (2) to read the entire list of works with which the course deals, together with such critical literature on each subject as there may be time for; (3) to participate each week in a general extempore discussion of the work in hand.

13. English Literature. Introduction to the Poetry of Browning. *Three hours.* Professor STRAUSS.

A study of selections from the *Dramatic Lyrics, Dramatic Romances, Men and Women, Dramatis Personae,* and one or two of the dramas.

15. English Literature. General Introduction to Mediæval Literature. *Two hours.* Professor MOORE.

After a study of the literary material and ideas of the early Germanic and Celtic peoples, and of the effect produced by conversion to Christianity and contact with the Latin Church, the course will take up the various kinds of literature (romantic, didactic, and satirical) produced between the twelfth and fifteenth centuries. The reading, which will be done in Modern English translations, will include representative works from the Scandinavian, Celtic, French, and English literatures of the Middle Ages.

17. Studies of the text of Shakespeare. *Two hours.* Professor DEMMON.

Course 17 is designed principally for graduate students. The aim will be to illustrate the methods of textual study as applied to a play like *Hamlet,* and the difficulties to be overcome in establishing a text. The McMillan Shakespeare Library affords a very full apparatus for these studies.

18. English Literature. The Development of the English Novel. *Two hours.* Professor STRAUSS.

A study of the rise of the novel in England as an art form, with an attempt to discover the principle of its development. Lectures, discussions, and readings in the works of Lyly, Greene, Lodge, Nashe, Sidney, Bunyan, Defoe, Swift, Addison and Steele, Richardson, Fielding, Smollett, Sterne, and others.

20. Studies in Spenser. *Two hours.* Professor TILLEY.

Lectures and readings, with the consideration of special problems centering about Spenser.

21. Seminary in Middle English. Primarily for graduate students. *Two hours.* Professor MOORE.

The purpose of this course is to give training in methods of original investigation of literary and linguistic problems and to afford an opportunity for practice in the handling and presentation of material. The subject for 1916-1917 will be *Piers the Plowman.*

24. The English Bible, Its Literary Aspects and Influence. *Two hours.* Assistant Professor HUMPHREYS.

The King James Version will be used in class. A leading aim of this course (together with Course 25) will be to acquaint the student with the Scripture Story as material for literary allusion and illustration. The course may be taken in connection with or following Course 1.

[26. English Literature. Ben Jonson. *Two hours.* Professor TILLEY.

The course will consist of the critical reading of three of Jonson's representative plays, together with lectures on his relation to Shakespeare and other contemporary dramatists. Omitted in 1916-1917.]

27. Studies in Modern English Literature. Primarily for graduates. *Two hours.* Professor STRAUSS.

In 1916-1917 the subjects for study will be selected from the following: The Classical Movement; Restoration Comedy; Eighteenth Century Essayists; the Rise of Romanticism; Development of the Novel; Nineteenth Century Fiction; Browning's Major Works; Present Tendencies in the Drama.

30. Wordsworth and His Contemporaries. *Two hours.* Two sections. Assistant Professor GINGERICH.

A considerable portion of Wordsworth's works will be read in Class. Wordsworth's place in the Romantic Movement in English Literature will be fully considered. Coleridge, Byron, Shelley, and Keats will be studied in relation to the Romantic Movement.

SECOND SEMESTER

2. English Literature. Historical Outline, with assigned readings. *Three hours.* Nine sections. Professor TILLEY, Assistant Professors HUMPHREYS and GINGERICH, and Mr. RAYMOND.

4*a*. English Literature. Shakespeare. *Two hours.* Two sections. Professor TILLEY.

5*b*. The English Drama, from Shakespeare to the Closing of the Theatres, 1640. *Three hours.* Professor TILLEY.
Course 5*b* is a continuation of Course 5*a*.

6*a*. English Literature. From Pope to Wordsworth. *Three hours.* Assistant Professor HUMPHREYS.

8. Anglo-Saxon Poetry: Beowulf. *Three hours.* Professor MOORE.
Reading of the text, with study of the metre and literary characteristics of Anglo-Saxon poetry and some consideration of the relation of the poem to the early literature in other Germanic languages.

9. History of the English Language. *Two hours.* Professor TILLEY.
Course 9 is a continuation of Course 7. Graduate students will elect this as a three hour course, the third hour to be arranged.

12. Shakespeare Seminary. Plays selected: *A Midsummer Night's Dream; The Merchant of Venice; As You Like It; The Tempest; Richard III;* the two parts of *Henry IV; Henry V; Romeo and Juliet; Hamlet; Othello; King Lear; Macbeth, Coriolanus. Two hours. Sections to be arranged.* Professors DEMMON and STRAUSS.
Open to seniors and graduate students. The method is similar to that pursued in Course 11. Graduate students may elect this course as *three hours.*

13*a*. The Poetry of Browning. *Three hours.* Professor STRAUSS.
A study of several of Browning's major works, such as *Pippa Passes, Paracelsus, A Soul's Tragedy,* etc.

14. American Literature. Authors studied: Irving, Cooper, Bryant, Emerson, Hawthorne, Longfellow, Whittier, Poe, Holmes, Thoreau, Lowell, Taylor, Howells, and James. *Two hours.* Two sections. Assistant Professor GINGERICH.
Representative works of the authors named are studied and compared with masterpieces of British authors, and an attempt is made to discover the distinctively American element.
Sec. I is designed for upperclassmen only. Sec. II, is open to graduates only.

15*a*. General Introduction to Mediæval Literature. *Two hours.* Professor MOORE.
This course is a continuation of Course 15.

18*a*. English Literature. Prose fiction of the Nineteenth Century. *Two hours.* Professor STRAUSS.
Course 18*a* is a continuation of Course 18. Lectures, discussions, and readings in the works of Scott, Austen, Bulwer-Lytton, Disraeli, Dickens, the Brontë sisters, George Eliot, Trollope, Reade, Kingsley, Meredith, Blackmore, Hardy, Stevenson, and others. Open to students who have completed Course 18, and to others who receive permission.

19. English Literature. A study of poetic forms (Epic, Lyric, Drama) as illustrated in the works of Tennyson. Introduction to the study of English metres. *Three hours.* Professor DEMMON.

This course must be preceded by Courses 1 and 2 or an equivalent.

21*a*. Seminary in Middle English. Primarily for graduate students. *Two hours.* Professor MOORE.

This course is a continuation of Course 21.

22. English Literature. Contemporary Drama. *Two hours.* Professor STRAUSS.

A brief review of the drama from Sheridan to Bulwer-Lytton will be followed by closer study of the principal Nineteenth and Twentieth Century dramatists, both English and Continental, and an attempt will be made to discover the present tendencies of the drama. The course presupposes a knowledge of Elizabethan and Restoration drama, and is open only to those who receive special permission.

[22*a*. Technique of the Drama. *Two hours.* Professor STRAUSS.

A practical study of dramatic form and structure based upon analysis of modern plays and upon recent critical literature. Open only to those who receive special permission. Omitted in 1916-1917.]

23. Middle English. *Three hours.* Professor MOORE.

The purpose of this course is to trace the process by which Anglo-Saxon developed into Modern English, to illustrate the principles of the science of language, and to give the student some acquaintance with the literature of the thirteenth and fourteenth centuries. Open to students who have had Courses 3 or 3*c*, and to others who obtain special permission of the instructor.

25. The English Bible, Its Literary Aspects and Influence. *Two hours.* Assistant Professor HUMPHREYS.

Course 25 is a continuation of Course 24.

28. Studies in Modern English Literature. Primarily for graduates. *Two hours.* Professor STRAUSS.

Course 28 is a continuation of Course 27.

RHETORIC

Courses 1 and 2 are required of all first-year students, and must precede all other courses.

The courses offered in this department are of three principal kinds: (1) Courses intended primarily to give the student practice in the leading types of prose composition including Courses 1, 2, 3, 4, 15, and 20. (2) Courses intended primarily to familiarize the student with the fundamental principles of Rhetoric and Criticism, including Courses 5, 7, 8, 9, 10, 12, 16, and 17. (Courses 7, 8, 12, 23, and 24 combine advanced composition with the study of rhetorical and critical theory). (3) Courses for students who are preparing for newspaper work. A special circular regarding these courses may be obtained upon application to the Secretary of the University.

Courses 1 and 2 are introductory in character. They aim to promote clearness and correctness of expression through practice in the simpler kinds of composition. Courses 3 and 4, in which there is systematic practice in the four principal types of prose composition, are intended to follow Course 2, and are usually taken in the second year. Courses 5, 12, 15, 16, and 20, being still more advanced, belong naturally in the third year. In Courses 7 and 8 it is assumed that the student has already acquired considerable proficiency in composition and is prepared to give attention chiefly to the discussion of principles. Courses 23 and 24 are for those who show exceptional proficiency in writing or who aim to follow literary composition as a profession. Courses 9, 9*a,* 10, and 10*a,* are planned solely for students who are working for the higher degrees.

The advanced and graduate courses presuppose an acquaintance with the fundamental principles of rhetoric and a reasonable proficiency in the technique of prose. The study of composition, except where it is pursued with reference to the theory of teaching, is regarded as an undergraduate study.

Students in the Combined Literary and Law Curriculum should elect Courses 1, 2, 3, and 4, though Course 15 may with permission of the instructor be substituted for Course 3 or Course 4.

Consultation Hours.—Professor SCOTT may be consulted in Room 207, W. H., from 8:30 to 9 A. M. on *M, Tu, W,* and *Th;* Professor RANKIN, *Tu, Th,* 4 to 5, Room 8, U. H.; Assistant Professor BRUMM, *M,* 4 to 5, Room 203, W. H.; Dr. MALLORY, *W, F,* 4 to 5, Room 101, W. H.; Mr. COWDEN, *Tu,* 4 to 5, Room 101, W. H.; Mr. WEIR, *M,* 9 to 12, *S,* 8 to 9, Room 203, W. H.; Mr. SENSEMAN, *W,* 3 to 4, 4:30 to 5, Room 103, W. H.; Mr. SCOTT, *W,* 3:30 to 5, Room 201, W. H.; Mr. BRYSON, *M, W,* 3 to 4, Room 201, W. H.; Mr. GRIM, *M,* 3 to 4. *S,* 8 to 9, Room 201, W. H.; Mr. EVERETT, *M,* 3 to 4, Room 203, W. H.; Mr. FEINSTEIN, *M,* 4:30 to 5, Room 101, W. H.

From September 27 to October 4, inclusive, an instructor will be in Room 201, W. H., from 10 to 12 daily, to assist students in making their elections.

FIRST SEMESTER

1. Composition and Rhetoric. *Three hours.* Twenty-eight sections. Dr. MALLORY, Mr. COWDEN, Mr. WIER, Mr. SENSEMAN, Mr. SCOTT, Mr. BRYSON, Mr. EVERETT, Mr. GRIM, Mr. FEINSTEIN, Mr. GOSHORN, and Mr. LASHER.

   All students electing Rhetoric 1 must consult the Committee on Classification for assignment to sections.

2. Continuation of Course 1. *Three hours.* Mr. GOSHORN.

This course is the same as Course 2 given in the second semester. It is open only to students who have already completed Course 1, or have received credit for it. Students who need three hours to complete the requirement in Rhetoric for graduation are expected to take Course 2 in the first semester, as the sections announced for the second semester are not open to such students.

3. Advanced Composition and Rhetoric. Essays in description and narrative. *Three hours.* Six sections. Professor RANKIN, Assistant Professor BRUMM, and Dr. MALLORY.

5. Rhetorical Analysis. *Two hours.* Professor RANKIN.

Special attention will be given to the minute analysis of structure.

Open to Juniors and Seniors who have had Rhetoric 3 and 4.

7. Interpretations of Literature and Art. *Two hours.* Two sections. Professor SCOTT.

The course begins with a discussion of critical principles. Later these principles are applied in the appreciation and interpretation of specimens of literature and art. Open only to senior and graduate students who have permission. The course is conducted as a seminary.

9. Seminary in Rhetoric and Criticism. *Two hours.* Professor SCOTT.

The subjects of discussion vary from year to year. Among the problems to be investigated are the following: The origins of prose; the nature and origin of the leading types of discourse; the psychology of figures of speech; the rhythm of prose; the sociological basis of the principles of usage; the origin, development, and laws of the process of communication.

Open only to graduate students.

9*a*. Special Problems in Rhetoric and Criticism. *Two hours.* Professor SCOTT.

Limited to students who are working for the Doctor's degree.

15. The Theory and Practice of Argumentation. *Three hours.* Assistant Professor BRUMM.

A study of the principles which underlie argument. Special attention will be paid to the brief and to the relative value of various forms of proof. This course is intended for those who desire special training in argumentation. Open to students who have had Courses 1, 2, 3, and 4, and others who receive special permission.

17. Diction and Usage. *Two hours.* Mr. COWDEN.

The work of this course is intended to accomplish two results: (1) the establishment of a method of dealing with problems in diction and usage; (2) the development of the student's sense for the right use of word, phrase, and idiom. Under the first heading various questionable expressions will be discussed with a view to determining their standing as parts of the English language. Under the second heading passages from standard prose and verse will be examined with a view to discovering, whether each word or phrase used is the one best adapted to the author's purpose.

23. Seminary in Advanced Composition. *Two hours.* Professor SCOTT.

This course is intended for a limited number of advanced students who, writing with facility and being in the habit of writing, desire personal criticism and direction. No work is assigned and no set program is followed, but each student is expected in the course of the semester to submit for revision a considerable number of manuscripts. In connection with the class discussions, there will be talks upon the essentials of English composition and the principles of criticism and revision. Open only to seniors who receive special permission.

Courses in Journalism

31. The Newspaper. Lectures or modern newspaper organization and methods, with practice in the preparation of news material. *Three hours.* Mr. BRYSON.

This course may be elected as 31*b, two hours,* without the practice in writing.

33. Editorial Writing. A study of the editorial policy of important newspapers, with practice in the writing of comment on current news. *Three hours.* Mr. BRYSON.

35. Seminary in the Newspaper, its Nature, Function, and Development. Open only to students who obtain special permission. *Two hours.* Professor SCOTT and Mr. BRYSON.

37. Practical Newspaper Work. Open only to students who are registered in the program in preparation for newspaper work. It is in general limited to seniors and must not be elected without permission. The work is done in connection with one of the student or University publications, and is largely individual in character. *Credit from one to four hours, to be arranged.* Mr. BRYSON.

SECOND SEMESTER

2. Composition and Rhetoric. *Three hours.*
Continuation of Course 1. The hours and instructors are the same as those announced under Course 1, the first semester. Students cannot change from one section to another at the beginning of the second semester without obtaining special permission.

1. Same as Course 1 given in the first semester. Open only to students who enter at the beginning of the second semester, or who have failed to receive credit in Course 1 in the first semester. *Three hours.* Mr. WIER.

4. Advanced Composition and Rhetoric. Essays in Exposition and Argument. *Three hours.* Five sections. Professor RANKIN, Assistant Professor BRUMM, and Mr. MALLORY.

8. Prose Fiction. *Two hours.* Two sections. Professor SCOTT.
Studies in the structure and function of the leading types of prose fiction, including the short story.
Open only to senicr and graduate students who have permission. The course is conducted as a seminary.

10. Seminary in Rhetoric and Criticism. *Two hours.* Professor SCOTT.
Continuation of Course 9. Open only to graduate students.

10*a*. Special Problems in Rhetoric and Criticism. *Two hours.* Professor SCOTT.
Limited to students who are working for the doctor's degree.

16. Modern English Prose. *Three hours.* Assistant Professor BRUMM.
A study of the development of English prose style as exemplified in the writings of Sidney, Lyly, Bacon, Milton, Dryden, Swift, Addison, Johnson, Lamb, Carlyle, Macaulay, Arnold, Pater, and Stevenson. Written reports and class room discussions.

18. Junior Composition. *Two hours.* Mr. COWDEN.
A course intended to give training in the writing and revising of compositions. The student will be expected to submit five or six manuscripts during the semester. These manuscripts are to be carefully revised, the work of revision continuing until the student has made his composition as nearly perfect as his talents permit.
Open only to juniors who have had Rhetoric 3 or 4, and limited to twenty students. All those wishing to take this course should consult with the instructor before making their election.

20. Short Story Writing. *Two hours.* Two sections. Professor RANKIN.

Analytic studies in the technique of the short-story will be accompanied by constructive work in story writing.

Open only to juniors and seniors who have had Course 3.

24. Seminary in Advanced Composition. *Two hours.* Professor SCOTT.

Continuation of Course 23. Open only to students who receive special permission.

Courses in Journalism

32. The Newspaper. Lectures on the development of the American newspaper, with practice in the various kinds of newspaper writing. Practice sections to be arranged. *Three hours.* Mr. BRYSON.

This course may be elected as *32b, two hours,* without the practice in writing.

34. Reviews. A study of critical principles as applied to current literature with emphasis upon the writing of reviews for periodicals and newspapers. Open only to students who obtain permission. *Three hours.* Mr. BRYSON.

36. Seminary in the Newspaper. *Two hours.* Mr. BRYSON.
Continuation of Course 35.

38. Practical Newspaper Work. Mr. BRYSON.
Continuation of Course 37.

ORATORY

Students who desire practice in public speaking in addition to that offered in the class room are advised to join a literary society and take part in the debates and oratorical contests provided by the Oratorical Association. For information regarding the contests of the Northern Oratorical League, the Intercollegiate Peace Association, the Central Debating League, and the Midwest Debating League, and the medals and testimonials offered, see page 75 or consult the instructors of this department.

Students who wish to acquire exceptional proficiency in public speaking should begin class work early in their college course.

Those preparing to teach Oratory should take at least twenty hours of work in the department selected after consultation with the professor in charge. Only those who show marked ability in expressive reading and in public speaking will be encouraged to prepare for teaching.

Consultation Hours. — Professor TRUEBLOOD may be consulted in Room 302, M. H., *M, Tu, W, Th, F,* at 12; Assistant Professor HOLLISTER, *Tu, Th,* at 10. Room 302, M. H. Additional consultation hours will be posted on the bulletin board.

During Registration week, September 27 to October 4, Professor TRUEBLOOD or Assistant Professor HOLLISTER, 10 to 12, Room 302, M. H.

FIRST SEMESTER

1. Elocution; Introduction to Speaking and Reading. ***Three hours.*** Seven sections. Mr. IMMEL and Mr. EICH.

This course consists in (1) a study of the theory of expression by voice and action, (2) exercises for developing the voice and improving the stage presence, (3) practice in reading and speaking. The course seeks to give the student the fundamental principles necessary to self criticism, and an opportunity to apply these principles in practice. Orations and narratives are studied, memorized, and interpreted from the platform and short original speeches are given, with special reference to distinct, direct, interesting speaking.

2. Public Speaking. ***Two hours.*** Two sections. Assistant Professor HOLLISTER.

Studies in public speaking and the delivery of short original speeches for special occasions. Emphasis is laid on the preparation of a thorough brief for each speech. Speeches are given from the platform without the use of notes. This course aims to give as much practice in self expression as possible.

Course 2 must be preceded by Course 1 or its equivalent.

3. Study of Great Orators. ***Three hours.*** Professor TRUEBLOOD.

Lectures on methods of public address and sources of power. Study of representative orations. Structure of the oration. Qualities of a good oration. The preparation and delivery of speeches. Those who desire at some time to enter the oratorical contests should take this course. Orations prepared for University contests will be accepted as a part of the work.

Course 3 must be preceded by Courses 1 and 2 or their equivalent.

5. Debating. ***Three hours.*** Professor TRUEBLOOD.

Study and application of the principles of argumentation. Preparation of briefs. Leading questions of the day studied and debated in class. Students take part in six debates. The aim is to develop readiness in extempore speaking, to give freedom and ease on the platform, and to cultivate the logical processes of analysis and discrimination. All who expect to enter the debating contests or who expect to teach argumentation should take this course.

Course 5 must be preceded by Courses 1 and 2 or their equivalent.

5*a*. Debating. *Two hours.* Mr. IMMEL.

Study of the elements of effective debating. Gathering of material, brief-making, construction of arguments and effective presentation of them from the platform are aims of this course. Each student takes part in five debates and makes short speeches from the floor in general discussions.

This course is similar in character and purpose to Course 5.
Course 5*a* must be preceeded by Courses 1 and 2 or their equivalent.

[7. Shakespearean Reading. *Two hours.* Two sections. Professor TRUEBLOOD and Mr. WILNER.

Critical study of two plays, a tragedy and a comedy. Analysis of character, plot, and incident. Expressional reading of principal scenes. Characters assigned to members of the class and scenes presented from the platform. Public presentation of plays twice each semester. Plays selected from the following: *Julius Caesar, Othello, The Merchant of Venice, Romeo and Juliet, The Tempest.*

Course 7 must be preceded by Course 1 or its equivalent. Omitted in 1916-1917.]

7*a*. Shakespearean Reading. Continuation of Course 7. *Two hours.* Two sections. Professor TRUEBLOOD and Mr. WILNER.

Plays to be selected from the following: *Coriolanus, King John, Henry VIII, Anthony and Cleopatra, The Comedy of Errors, The Taming of the Shrew, Measure for Measure.*
Course 7*a* must be preceded by Course 1, or its equivalent.

9. Interpretive Reading. *Two hours.* Two sections. Assistant Professor HOLLISTER and Mr. ————

This course involves a study in appreciation, and oral interpretation of masterpieces of literature. Special effort is made, first, to understand and feel, second, to express for others. Selections drawn from miscellaneous sources are read aloud in class and delivered from the platform. The course is designed, not only to develop good reading for purposes of culture and public entertainment, but especially for those who expect to teach English Literature.

Open to students who have had Course 1 or its equivalent.

14. Play Production. *Two hours.* Assistant Professor HOLLISTER and Mr. EICH.

A study of plays suitable for stage presentation, and of the problems involved in producing such plays. One or more plays will be presented in costume. Open only to advanced students who receive permission.

SECOND SEMESTER

1. Elocution: Introduction to speaking and reading. *Three hours.* Five sections. Mr. IMMEL and Mr. EICH.

   This is the same as Course 1 given in the first semester.

2. Public Speaking. *Two hours.* Five sections. Mr. IMMEL and Mr. EICH.

   This is the same as Course 2 given in the first semester.

   Course 2 must be preceded by Course 1 or its equivalent.

3. Study of Great Orators. *Three hours.* Professor TRUEBLOOD.

   This is the same as Course 3, given the first semester.

   Students who desire to enter the oratorical contests of the following year are advised to take this course and prepare their orations.

   Course 3 must be preceded by Courses 1 and 2 or their equivalent.

[4. Shakespearean Reading. *Two hours.* Two sections. Professor TRUEBLOOD and Mr. WILNER.

Oral reading of two plays, a tragedy and a comedy. Characters assigned to members of the class and plays presented from the platform. Public presentation of plays twice each semester. The aim is to stimulate interest in Shakespeare by vocal interpretation and dramatic presentation. Plays selected from the following: *Macbeth, Richard III, Much Ado Abaut Nothing, Henry IV* (Part I), *The Winter's Tale, A Midsummer Night's Dream.*

Course 4 must be preceded by Course 1, or its equivalent. Omitted in 1916-1917.]

4*a*. Shakespearean Reading. Continuation of Course 4. *Two hours.* Three sections. Professor TRUEBLOOD and Assistant Professor HOLLISTER.

Plays to be selected from the following: *Hamlet, King Lear, Henry V, As You Like It, Twelfth Night, Cymbeline.*

Course 4*a* must be preceded by Course 1, or its equivalent.

5. Debating. *Three hours.* Professor TRUEBLOOD.

   This is the same as Course 5, given in the first semester.

   Course 5 must be preceded by Courses 1 and 2.

10. Advanced Public Speaking. *Three hours.* Professor TRUEBLOOD and Assistant Professor HOLLISTER.

    Examination of the Webster-Hayne and the Lincoln-Douglas debates. Study of famous platform addresses. Preparation and delivery by each student of an extended address. Participation in a public debating or oratorical contest during the semester, or the presentation of an equivalent amount of practical speaking before public assemblies is required.

    Open to students who have shown exceptional proficiency in speaking and reading. The class is limited to sixteen persons.

    Course 10 must be preceded by Courses 1, 2, and 3 or 5.

11. Oral Interpretation of Tennyson. *Two hours.* Two sections. Assistant Professor HOLLISTER and Mr. ——————
Open to students who have had Course 1, or its equivalent.

[11*a*. Oral Interpretation of Browning. *Two hours.* Two sections. Assistant Professor HOLLISTER and Mr. ——————
Open to students who have had Course 1 or its equivalent.
Omitted in 1916-1917.]

14*a*. Play Production. *Two hours.* Assistant Professor HOLLISTER and Mr. EICH.
This is similar to Course 14 given during the first semester.
Open only to advanced students who receive permission.

15. Theory of Expression. *Two hours.* Assistant Professor HOLLISTER.
An investigation of the theory of oral expression. Lectures, assigned readings, discussions, experiments. Each member of the class assigned a topic for investigation, report, and thesis. Open only to seniors and graduates who receive permission.

FINE ARTS

The aim of the courses offered in this department is to give the student a knowledge of the origin and development of the Fine Arts throughout the ages. Together with the history of their growth, are studied their principles, technique, appreciation, and criticism, and the relation of the art of the various peoples to their history, religion, literature, and daily life.

A general knowledge of history is presumed, and a knowledge of Latin and Greek is very desirable. Ability to read French and Italian will be of great assistance, though not necessary.

It is strongly urged that the courses be elected in their numerical sequence. Course 1 is offered each semester and is a prerequisite for all the others. None of these courses is open to freshmen.

Consultation Hours. — Professor HERBERT R. CROSS will meet students for consultation at his office in Memorial Hall, *M, W, F,* from 9:30 to 10, and at 3.

FIRST SEMESTER

1. General Introductory Course in the Fine Arts. An investigation of the origin, development, and essential principles and technique of Architecture, Sculpture, and Painting, including a brief survey of their history from prehistoric times to the present. Text-book, S. Reinach's *Apollo.* Illustrated lectures, required reading, and written tests. *Three hours.* Professor CROSS.
This course (or its equivalent, satisfactory to the instructor) is a prerequisite for all other courses in this department.

3. Greek Art. The history of the Fine Arts among the Greeks, to the Roman period, with a preliminary survey of Egyptian and Mesopotamian art. Special attention is given to the great sculptors of the fifth and fourth centuries, B. C. Illustrated lectures, required reading, written tests. *Three hours.* Professor CROSS.

5. Italian Renaissance Art. The history of the Fine Arts in Italy in the fifteenth and sixteenth centuries, with special attention to the development of Italian painting. Illustrated lectures, required reading, written tests. *Three hours.* Professor CROSS.

SECOND SEMESTER

1. General Introductory Course. A repetition of Course 1 of the first semester. *Three hours.* Professor CROSS.

[4. Roman and Medieval Art. The history of the Fine Arts in the Roman, Early Christian, Byzantine, and Medieval periods, with special attention to Roman and Gothic architecture. Illustrated lectures, required reading, written tests. *Three hours.* Professor CROSS. Omitted in 1916-1917.]

6. The Renaissance Outside of Italy. The history of Spanish, French, Flemish, Dutch, German, and English Renaissance Art (including the nineteenth century.) Illustrated lectures, required reading, written tests. *Three hours.* Professor CROSS.

8. American Art. The history of the Fine Arts (architecture, sculpture, and painting), in the United States from Colonial times to the present, with especial emphasis on contemporary Art. Illustrated lectures, required reading, oral quizzes. *Three hours.* Professor CROSS.

MUSIC

The courses in Music are open to students who evince sufficient ability to pursue them with profit, and are subject to the general rule regarding elections. All the courses in music run through the entire year, and students are earnestly advised to take them both semesters. The instruments in the Stearns Collection, an "Aeolian Orchestrelle," a "Pianola," "Victor" records, and lantern slides are used for purposes of illustration.

Practical Music.—Credit, not to exceed two hours per semester, will be given for advanced work in Pianoforte, Organ, Violin, and Singing, taken in the University School of Music under conditions given below. (See Courses 17 and 18.)

Consultation Hours.—During the period of registration, daily, 10-12; for the remainder of each semester, *M, W,* at 4. Hill Auditorium. (Rear entrance, Ingalls Street.)

All courses in Music will be given in the Lecture Room, second floor of Hill Auditorium. Rear entrance, Ingalls Street.)

FIRST SEMESTER

Technical Courses.—1, 3, 5, 7, and 17. (Course 7 is intended primarily for graduates, but is open to undergraduates who receive special permission.)

1. Science of Harmony. *Two hours.* Mr. MOORE.
   In this course, as in the other technical courses, the student is encouraged to make a practical application of the subject through creative work of a nature conditioned by the scope of the course and the ability of the student.

3. Simple Counterpoint. *Two hours.* Mr. MOORE.
   This course includes a thorough review of Course 1, with a more extended application to creation.

5. Double Counterpoint. *Two hours.* Professor STANLEY.

7. Canon and Fugue. *Two hours.* Professor STANLEY.

17. Advanced Practical Music. *One or two hours.*
   This course may be elected only by written permission of Professor STANLEY, and all elections must be in his name. It may be elected thereafter as 17*a* or 17*b,* if deemed advisable or deserved, under the same condition.

Historical and Critical Courses.—1*a,* 9, 11, 13, 15.

1*a*. Creative Listening. *Three hours.* Professor STANLEY.
In this course, which requires no preparatory training, students are led to an appreciation of the best music through systematic and directed listening, supplemented by the study of the best critical writers. The opportunities for hearing good music, elsewhere stated, will in this manner become increasingly stimulating and valuable, and must be utilized as a condition of receiving credit.

9. History of Music. From the Christian Era to the Beethoven Period. *Three hours.* Professor STANLEY.

13. Evolution of Musical Instruments. *Two hours.* Professor STANLEY.

15. Seminary. Bach, Beethoven, and Brahms. *Two hours.* Professor STANLEY.
   The subjects covered each year being different in nature and scope, this course may be reelected with Professor STANLEY'S consent.

SECOND SEMESTER

Technical Courses.

2. Science of Harmony. *Two hours.* Mr. MOORE.
4. Simple Counterpoint. *Two hours.* Mr. MOORE.
6. Double Counterpoint. *Two hours.* Professor STANLEY.
8. Canon and Fugue. *Two hours.* Professor STANLEY.
18. Advanced Practical Music. *One or two hours.*
    This course may be elected only by written permission of Professor STANLEY, and all elections must be in his name. It may be elected again as 18*a* or 18*b*.

Historical and Critical Courses.

2*a*. Creative Listening. A continuation of Course 1*a*. *Three hours.* Professor STANLEY.

10. History of Music. From the Beethoven period to Wagner and the Ultra Moderns. *Three hours.* Professor STANLEY.

14. Evolution of Musical Instruments. *Two hours.* Professor STANLEY.

16. Seminary. Continuation of Course 15. *Two hours.* Professor STANLEY.
    The subjects covered each year being different in nature and scope, this course may be reelected with Professor STANLEY's consent.

HISTORY

Students entering upon historical work are, as a rule, required to take first either Courses 1 and 2, dealing with the history of Europe since the seventeenth century, or Courses 1*a* and 2*a*, dealing with the history of England, or Courses 1*b* and 2*b*, dealing with the history of Greece and Rome. The order advised is 1 before 2, or 1*a* before 2*a*, or 1*b* before 2*b;* but those who find it necessary to begin their work in history the second semester may take 2 before 1, or 2*a* before 1*a*, or 2*b* before 1*b*. Students who intend to take advanced work in history should elect these introductory courses (either 1 and 2, or 1*a* and 2*a*, or 1*b* and 2*b*) as early as possible after entering college, preferably in the first year.

Juniors and seniors may elect these introductory courses only by special permission, and for three hours credit instead of four.

As soon as the introductory work is completed, students may elect courses in one or more of the following fields: American history (13, 14, 15, 37); ancient history (7, 8); Engish history (3, 4, 5, 6); history of the middle ages and age of the Renaissance and Reformation (9, 10); modern European history (11, 12); Latin-American History (51, 52, 53, 54). These courses lead on to more advanced work in each field, and students are advised to consult with those in charge of such work concerning choice of courses.

Registration of Students Preparing to Teach History in the Schools. — Students who expect to teach history in the schools and who desire recommendation from members of the department of history, should register with the department as early as possible in their course, preferably by the beginning of their junior year. Such students may thus have special guidance in planning their work. Ordinarily they will be required to take in history at least seventeen hours beyond the introductory courses, and to include among the courses taken at least two of the more advanced courses (preferably Studies or Seminary work), and Course 50. But individual needs will largely determine the advice given, alike for the work in history and for work in other fields. The registration will be in charge of Professor Dow.

Consultation Hours.—Throughout registration week, September 27 to October 4, Professor TURNER and Assistant Professor FRAYER, daily, 10-12. Room 202, T. H.

During the year the instructors in the department will have consultation hours as follows:

Professor VAN TYNE, the first week of each semester, daily at 11; the rest of the semester Thursday at 12. Room 204, T. H.

Professor DOW, the first week of the year, daily at 11; the rest of the year, *M, W,* at 11. Room 201, T. H.

Professor PHILLIPS, the first week of each semester, daily at 11; the rest of the year, *W,* at 12. Room 203, T. H.

Professor CROSS, the first two weeks of each semester, daily at 12; the rest of the semester, *M, W, F,* at 12. Room 204, T. H.

Professor TURNER, the first week of each semester, daily at 11; the rest of the semester, to be announced. Room 204, T. H.

Assistant Professor FRAYER, the first week of the year, daily at 4. Room 204, T. H.; the rest of the year, to be announced.

Assistant Professor BOAK, the first week of the year, daily at 1. Room 204, T. H.; the rest of the year *M, W,* at 10. Room 205, T. H.

Assistant Professor SCHURZ, the first week of the year, daily at 9; the rest of the year, *W,* at 1. Room 201, T. H.

Dr. SCOTT, the first week of the year, daily at 4. Room 202, T. H.; the rest of the year, to be announced.

Mr. McLEAN, the first week of the year, daily at 1. Room 204, T. H.; the rest of the year, to be announced.

FIRST SEMESTER

Primarily for Undergraduates.

1. The General History of Europe, from the seventeenth century to 1815. Lectures, and recitations in sections. *Four hours.* Assistant Professor FRAYER, Dr. SCOTT, Dr. CRANE, and reading assistants.

This course and Course 2 deal with Europe since the Thirty years War. The rise of Prussia and of Russia, the decline of Spain, the ascendancy of France, the great Revolution and the Napoleonic empire are the chief subjects for study during the first semester; the growth of nationalities in the nineteenth century, and present conditions, during the second semester.

Courses 1 and 2 are not open to those who have taken or are taking Courses 1*a* and 2*a*. Juniors or seniors may elect this course only by special permission, as

Course 101, and will receive but *three hours credit.*

1*a*. The General History of England, to the accession of Henry VII. Lectures, and recitations in sections. *Four hours.* Professor TURNER, Mr. MCLEAN, Dr. CRANE, and reading assistants.

Ten quiz sections, to be arranged at the beginning of the year, and to be met by the instructors in turn.

This course and Course 2*a* are designed to give some idea of the character and culture of the people of England, and of the development of institutions which were afterwards brought to America. Narrative and military history will not be neglected, but emphasis will be put upon social and economic matters and the development of the constitution.

Courses 1*a* and 2*a* are not open to students who have taken or are taking Courses 1 and 2. Juniors or seniors may elect this course, only by special permission, as

Course 101*a*, and will receive but *three hours credit.*

1*b*. The History of Greece. Lectures, and recitations in sections. *Four hours.* Assistant Professor BOAK.

This is an introductory course, designed (like Courses 1 and 1*a*) primarily for freshmen. Juniors or seniors may elect this course, only by special permission, as

Course 101*b*, and will receive but *three hours credit.*

5. The History of England from the Beginnings of the American Revolution to the Reform Bill of 1832. Lectures, and discussions and assigned reading. *Three hours.* Professor CROSS.

This course may be taken as a continuation of Courses 1*a* and 2*a*, but is open to students who have had Courses 1 and 2. It deals with the social, industrial, religious, and intellectual, as well as the political and constitutional aspects of the period.

9. Europe in the Middle Ages, from Rome to Feudalism. Lectures, reading, and discussions. *Three hours.* Professor DOW.

This course treats of the principal changes in Europe from the decline of Rome to the height of the feudal régime. It forms the most suitable beginning for work in the middle ages, the Renaissance, and the Reformation; and should be taken preferably in the sophomore or the junior year.

[11. The Rise of Prussia as a Factor in European History in the Seventeenth and Eighteenth Centuries. Lectures, reading, and quiz. *Three hours.* Assistant Professor FRAYER.

Although the history of Prussia will be strongly emphasized, the general development of modern Germany will be treated; and a comparative study will be made of the influence exerted by the Enlightened Despotism of the eighteenth century. Omitted in 1916-1917.]

11*a*. The History of France from 1715 to 1815. Lectures, assigned reading, special reports, and discussions. *Three hours.* Assistant Professor FRAYER.

This course will deal with the political, social, and economic conditions in France under the Old Régime, including the influences exerted by the Philosophers, Encyclopaedists, and Economists, the causes and the events of the French Revolution; the rise of Napoleon, the Consulate and Empire; and the more important results for Europe as a whole.

14. The Political and Constitutional History of the United States. *Three hours.* Lectures, and recitations in sections. Professor VAN TYNE.

This course, supplemented by Course 15 in the second semester, covers the history of the United States from the outbreak of the Revolution to the Civil War. Special attention is given in this semester to the divergent English and American political theories, the schemes for financing the Revolutionary War, the European diplomatic entanglements, the relations of the Continental Congress and the states, the efforts to solve the problem of imperial organization, the Constitutional Convention, and the Federalist organization of the new government.

This course should be taken in the sophomore year by those who propose to make a special study of American History.

37. The History of the United States in the Civil War and Reconstruction. Lectures, reading, and quizzes. *Three hours.* Professor PHILLIPS.

This course treats of the causes and process of secession; the problems and conduct of the war; and the theories and readjustments in industry, society, and government which followed the collapse of the Southern Confederacy.

For Upperclassmen and Graduates.

3. The Constitutional and Legal History of England, to Magna Charta. Lectures, discussions, and assigned reading. *Three hours.* Professor CROSS.

The aim of this course is to explain the formation of the English constitution and to trace the origin and development of English institutions, political and legal. It should be of particular interest to those who intend to study law. It is open to juniors and seniors who have had an introductory course, and by special permission to those who have not.

[7*a*. The Constitutional Development of the Greek States to the end of the Fifth Century. *Three hours.* Assistant Professor **Boak.**

Lectures, reports, and discussions. This course traces the development of political institutions and systems of government in the Greek states from their origins until the fall of the Athenian Empire, with special consideration of the Athenian democracy. Omitted in 1916-1917.]

[7*b*. Greek Political Theories of the Fourth Century and the States of the Hellenistic Age. *Three hours.* Assistant Professor **Boak.**

Lectures, reports, and discussions. This course treats of the theories of state of Plato and Aristotle, of the rise of Federal States, of Absolute Monarchy, of Bureaucracy, and of the other political developments of the Hellenistic Age. Omitted in 1916-1917.]

[19*a*. Medieval Civilization. Lectures, reading, and discussions. *Two or three hours.* Professor Dow.

This course treats of the leaders and dominant currents of thought and life in the middle ages, and of law and institutions when the feudal régime and the medieval church were at their height. Omitted in 1916-1917.]

19*b*. Social Europe, from medieval to modern times. Lectures, reading, and discussion. *Two* or *three hours, the third hour to be elected as 21b.* Professor Dow.

This course treats briefly of class development from Roman to feudal times; and then more especially of cleric, noble, peasant, artisan, and trader in the midst of feudalism, and of the chief social changes arising with the progress of industry and commerce, the building of regional and national states, and the new intellectual currents of the age of the Renaissance and Reformation.

[21*a*. Studies in Medieval History. *One* or *two hours.* Professor Dow.

This course is given to preparation and consideration of reports on subjects in the general field of Course 19*a*. Its chief end is guidance toward independent work, with reference to the needs of the beginner in advanced studies in history. Not given in 1916-1917.]

21*b*. Studies concerning feudal and early modern Europe. *One* or *two hours.* Professor Dow.

This course is given to preparation and consideration of reports on subjects in the general field of Course 19*b*. Its chief end is guidance toward independent work, with reference to the needs of the beginner in advanced studies in history.

38. The History of the South, Colonial and Ante-Bellum. Lectures, reading, and quizzes. *Three hours.* Professor PHILLIPS.

An economic, social, and political study. The plantation system, with its dependence upon staple crops, unfree labor, free trade, and local autonomy, is taken as a key to the development and policy of the South. The first semester's work, extending to 1820, deals chiefly with the development of the régime within the South.

51. The History of Latin America. Lectures and quiz. *Three hours.* Assistant Professor SCHURZ.

This course will deal with the European background of Spanish and Portuguese America, the conquest, the native civilizations, and the institutions and life of the colonial period. A reading knowledge of Spanish will be of considerable value.

53. The History of the Pacific Area. Lectures and quiz. *Three hours.* Assistant Professor SCHURZ.

The history of the activities of European peoples and of the United States in the Pacific Ocean and the adjacent regions; and the development of the native races of the Far East, such as the Chinese and Japanese; with a consideration of the present situation and problems within that area.

60. The Military History of the United States. *Three hours.* Assistant Professor BOAK.

This course will trace the military history of the United States in connection with the wars waged by this country with foreign nations. The general strategy of these campaigns will be discussed, and the condition of the military organization of the nation at the various periods will be carefully considered. Emphasis will be laid upon the lessons in the matter of military organization to be learned from the experiences of these wars, and attention will be given to the influence of political conditions generally upon military questions. To be eligible for this course students of this college must have taken History 1 and 2, or 1*a* and 2*a*, or their equivalent.

Primarily for Graduates.

17. Seminary in American Revolutionary History. *Two hours.* Professor VAN TYNE.

Open only to graduates and to seniors obtaining special permission. This course is intended to offer training in the investigation of historical problems and practice in the handling of original material. The work in 1916-1917 is concerned with a series of historical problems in the Constitutional Convention of 1787, chosen for the purpose of illustrating various methods of research.

23. Seminary in English History. *Two hours.* Professor CROSS.

Open only to graduates, and to seniors with the permission of the instructor. This course is devoted to the investigation of topics mainly in the sixteenth and seventeenth centuries. The work of 1916-1917 will be concerned with the beginnings of the Puritan Revolution.

25. Seminary in Medieval and Early Modern European History. *Two hours.* Professor DOW.

Open only to graduates and to seniors obtaining special permission.

41. Seminary in American History. *Two hours.* Professor PHILLIPS.

Intensive research by students upon assigned topics, and discussion of the reports presented. Open only to graduates and to seniors obtaining permission of the instructor. The field of study in 1917-1918 will be American negro slavery as a working régime and as an issue in public discussion. The period principally studied will be from 1830 to 1860.

47. Seminary in Modern European History. *Two hours.* Professor TURNER.

This seminary will deal with some of the more striking of the social and diplomatic problems of contemporary European history, such as socialism, syndicalism, and the women's movement, the rivalry of Germany and England, the opposition of Teuton and Slav, the development of the Triple Entente opposed to the Triple Alliance, the Turco-Balkan conflict, and the causes, general and immediate, of the great European War.

SECOND SEMESTER

Primarily for Undergraduates.

2. The General History of Europe since 1815. *Four hours.* Assistant Professor FRAYER, Dr. SCOTT, Dr. CRANE, and reading assistants.

This course forms a continuation of Course 1. The class will be organized in the same way as in the first semester, with lectures, quiz sections, hours, and rooms as announced under Course 1. Juniors or seniors may elect this course only by special permission, as

Course 102, and will receive but *three hours credit.*

2a. The General History of England, from the accession of Henry VII, to the end of the reign of George II. *Four hours.* Professor TURNER, Mr. MCLEAN, Dr. CRANE, and reading assistants.

This course forms a continuation of Course 1*a*. The class will be organized in the same way as in the first semester, with lectures, quiz sections, hours, and rooms as announced under Course 1*a*. Juniors or seniors may elect this course only by special permission, as Course 102*a*, and will receive but *three hours credit.*

2*b*. The History of Rome, to the fall of the Roman Empire in Western Europe. *Four hours.* Assistant Professor BOAK.

This course forms a continuation of Course 1*b*. The class will be organized in the same way as in the first semester, with lectures, quiz sections, hours, and rooms as announced under Course 1*b*. Juniors or seniors may elect this course only by special permission, as Course 102*b*, and will receive but *three hours credit.*

6. The History of England from the Reform Bill of 1820 to the Present Time. Lectures, discussions, and assigned reading. *Three hours.* Professor CROSS.

10. Europe from Feudal to Modern Times. Lectures, reading, and discussion. *Three hours.* Professor DOW.

This course treats of institutions, problems, and efforts in Europe when the feudal régime and the church were at their height, and then of various changes in the time of the Renaissance and Reformation. It should be taken preferably in the sophomore or the junior year; and, when possible, should be preceded by Course 9, or equivalent general preparation in the middle ages.

[12. The History of National Unity in the Nineteenth Century, with particular reference to Germany and Italy. Lectures and quiz. *Three hours.* Assistant Professor FRAYER. Omitted in 1916-1917.]

12*a*. Europe Since 1870. Lectures, assigned reading, special reports, and discussions. *Three hours.* Assistant Professor FRAYER.

Starting with the completion of Italian and German unity, the course will treat the recent diplomatic history of Europe, the formation of the Triple Alliance and the Triple Entente, the growth of intense national rivalries, Germany as a colonial and naval power, the Moroccan and Balkan Questions, and the outstanding causes of the Great War.

13. The History of Colonial America. Lectures, with assigned readings and quizzes. *Three hours.* Professor PHILLIPS.

Treating the general theme of the expansion of Europe into the two Americas, this course deals with the conditions and purposes of the colonizing nations; the problems of life and administration in the settlements; the process of conquering the wilderness and building commonwealths; the rivalry of empires and the friction between colonies and imperial governments.

15. The Political and Constitutional History of the United States. Lectures, discussions, and assigned reading. *Three hours.* Professor VAN TYNE.

Course 15 is a continuation of Course 14, and deals with the reform movements of the Jeffersonian democracy, the development of national feeling, the westward movement and the rise of the political power of the West, the Jacksonian type of democracy, slavery and abolition, party entanglement in the slavery issues, and the final clash of the northern and southern social systems upon the frontier border beyond the Mississippi.

For Upperclassmen and Graduates.

4. The Constitutional and Legal History of England since Magna Charta. Lectures, discussions, and assigned reading. *Three hours.* Professor CROSS.

This course is a continuation of History 3.

[8*a*. The Roman Republic.

Lectures, reports, and discussions. *Three hours.* Assistant Professor BOAK.

This course is a study of the constitutional development of the Roman state from its beginning until the end of the period of the Republic. Omitted in 1916-1917.]

8*b*. The Roman Empire. *Three hours.* Assistant Professor BOAK.

Lectures, reports, and discussions. This course is a study of the Roman governmental system from the foundation of the Principate by Augustus to the time of Justinian.

[20*a*. The Renaissance. Lectures, reading, and discussion. *Two* or *three hours.* Professor DOW.

This course treats of society, thought, and life in and beyond Italy, during the period of change from medieval to modern times. Not given in 1916-1917.]

20*b*. The Reformation. Lectures, reading, and discussion. *Two* or *three hours,* the third hour to be elected as Course 22*b*. Professor DOW.

This course treats of the history of Europe in the fifteenth and sixteenth centuries, with special reference to the Reformation,—its origin, its progress, and some of its consequences.

[22*a*. Studies in the Age of the Renaissance. *One* or *two hours.* Professor Dow.

This course is given to preparation and consideration of reports on subjects in the general field of Course 20*a*. Its chief end is guidance toward independent work, with reference to the needs of the beginner in advanced studies in history. Omitted in 1916-1917.]

22*b*. Studies in the History of the Reformation. *One* or *two hours.* Professor Dow.

This course is given to preparation and consideration of reports on subjects in the general field of Course 20*b*. Its chief end is guidance toward independent work, with reference to the needs of the beginner in advanced studies in history.

39. The History of the South, Colonial and Ante-Bellum. Lectures, reading, and quizzes. *Three hours.* Professor PHILLIPS.

An economic, social, and political study. The plantation system, with its dependence upon staple crops, unfree labor, free trade, and local autonomy, is taken as a key to the development and policy of the South. The second semester's work relates chiefly to the issues of state rights and slavery in federal politics.

50. The Study of History in the Schools. *One hour.* Professor Dow.

This course treats, largely in a practical way, the chief problems which students of history will meet with as teachers of history. It is open, as a rule, to all who have had or are taking at least two of the more advanced courses in history; and is required of those who desire recommendation from the department of history for teaching in the schools.

52. The History of Latin America. Lectures and quiz. *Three hours.* Assistant Professor SCHURZ.

Course 52 is a continuation of Course 51, and deals with the republican period of Latin America. Stress will be laid upon present-day conditions, political, social, and economic, and upon the relations of the republics with the United States.

54. The Spaniards in North America. Lectures and quiz. *Three hours.* Assistant Professor SCHURZ.

The history of the Spanish occupation in Mexico, and within the present territory of the United States; and of the development of republican Mexico.

Primarily for Graduates.

18. Seminary in American Revolutionary History. *Two hours.* Professor VAN TYNE.

Limited to graduate students and to seniors obtaining permission. Course 18 is a continuation of Course 17.

24. Seminary in English History. *Two hours.* Professor CROSS.
    This course is a continuation of Course 23. It is open only to graduate students and to seniors obtaining permission.

26. Seminary in Medieval and Early Modern European History. *Two hours.* Professor DOW.
    Open only to graduates and to seniors obtaining special permission.

42. Seminary in American History. *Two hours.* Professor PHILLIPS.
    Course 42 is a continuation of Course 41.

48. Seminary in Modern European History. *Two hours.* Professor TURNER.
    Course 48 is a continuation of Course 47.

POLITICAL SCIENCE

Political Science 1 and 2 are prerequisites for all other Political Science Courses.

Consultation Hours.—Throughout registration week, September 27 to October 4, a departmental representative, daily 10-12. Room 108, Ec.

During the year, Professor REEVES, daily except Friday and Saturday, at 10. Room 108, Ec.

Professor CRANE. *M, W, F,* at 11. Room 107, Ec.
Dr. HAYDEN. *M, W,* at 9. Room 108, Ec.
Mr. LANE. *M, F,* at 11. Room 107, Ec.

FIRST SEMESTER

I. Primarily for Undergraduates.

1. American Government. Lectures, readings, recitations, and reports. *Three hours.* Professor REEVES, Dr. HAYDEN, and Mr. LANE.
   This is a course designed primarily for undergraduates as a preparation for citizenship. It is conducted by means of lectures and recitations with supplementary readings extending throughout the year. It is expected that all students electing other courses in Political Science shall have had this course or its equivalent. The work begins with a preliminary consideration of the elements of Political Science largely from the historical point of view, and passes to a study of National Government and Administration. In the second semester the work is divided between the study of State Governments and Administration and that of the American Party System. Throughout the course attention is centered rather upon the actual workings of government than upon the more mechanical side of administration.

II. For Graduates and Undergraduates.

3. Municipal Government. Lectures, recitations, and reports. *Three hours.* Professor CRANE.

This course, while historical and comparative, gives special attention to the government of American cities of the present time. Recent tendencies and changes in municipal life and government are examined. Among the topics treated are: municipal charters, state, legislative, and administrative control, home rule, government by mayor and council, by commission, and with a city manager. To each student is assigned for investigation and report a special topic in the government and administration of some smaller American city. An additional hour, with credit, will be arranged for graduate students and for those entering upon the course leading to the degree of Master of Arts in Municipal Administration.

5. Public International Law. Lectures, recitations, and class-room discussions. *Three hours.* Professor REEVES.

The work in International Law is conducted principally by means of class-room discussion. After a general view of the elementary principles of the subject, international incidents are assigned for investigation and report. The intention is not so much to give drill in dogmatic statements of the law as to train in the independent analysis of international situations.

7. British Government and Administration. Lectures, readings, and recitations. *Three hours.* Dr. HAYDEN.

While a portion of this course is devoted to a study of English local government, its main interest is in the field of British central government and imperial administration. As present conditions are those mainly treated, the historical development of British governmental institutions is only incidentally touched upon. For this reason students are recommended to have preparation in English history.

11. Local Government. Lectures, readings, and recitations. *Two hours.* Professor CRANE.

This course includes an historical and comparative study of local government with particular reference to the special problems of local government exclusive of the municipality, such as: the administrative relation of the county and state; centralization of legislative and administrative control; simplification of the frame of government; local finance and accounting.

19. State Government and Administration. *Two hours.* Mr. LANE.

This course will consider the historical development and present tendencies in American State Constitutions, with emphasis upon the government and administration of Michigan.

21. Consular Administration and Methods. *One hour.* Professor **Crane.**

Beginning with an historical survey of the development of the consular functions in the United States, this course will treat of the organization and administration of the American Consular Service, and the activities of Consular offices.

23. Introduction to the Principles of Politics. *Two hours.* Professor **Crane.**

The purpose of this course is to familiarize the student with political terms and phrases which are in common use but of which the meaning is frequently obscured by their application to widely differing and often vague ideas. After clarifying political terminology as far as possible, attention is given to the origin and development of the simpler political ideas, resort being had in this connection to a study of ancient politics, particularly of Greece and Rome.

III. For Graduates.

13. Seminary in Political Science. *Two hours.* Professor **Reeves.**

The subject of the work of the seminary in Political Science for the year 1917-1918 will be the consideration of the international law cases and situations of the present war.

15. Journal Club in Political Science. *No credit given.* Professor **Reeves.**

A meeting of the graduate and advanced students will be held bi-weekly for discussion of recent literature in political science and international law.

17. Seminary in Municipal Administration. *Two hours.* Professor **Crane.**

The work of the seminary in municipal administration will be the investigation of municipal problems through research and report.

SECOND SEMESTER

I. Primarily for Undergraduates.

2. American Government. Lectures and quizzes. *Three hours.* Professor **Reeves,** Dr. **Hayden,** and Mr. **Lane.**

It is expected that those who have successfully pursued Course 1 will follow with Course 2.

II. For Graduates and Undergraduates.

4. Municipal Government. *Three hours.* Professor **Crane.** A continuation of Course 3.

The work of the second semester will be devoted to a discussion of municipal functions and problems, of the administrative principles and methods actually employed. A special topic is assigned to each student as in the first semester for investigation and report.

9. Constitutional Law. Lectures, discussions, and recitations. *Three hours.* Professor REEVES.

This course is designed for those students of American History and Political Science who do not expect to pursue the professional study of law. While a portion of the work is done by means of lectures, most of it consists of class-room analysis and discussion of the leading cases. Familiarity with American political history, as represented by college or university work in this subject, is expected of all who elect this course.

8. Comparative European Government. Lectures, readings, and recitations. *Three hours.* Dr. HAYDEN.

In this course attention is directed mainly to the governments and administrative systems of France, Italy, Switzerland, and the German Empire. Continental party systems and methods are studied in connection with the main subject of the course.

12. Colonial Administration. *Two hours.* Dr. HAYDEN.

This course is both historical and comparative. The great historical colonial systems are examined with special reference to the problems connected with the American dependencies. This is followed by a study of the colonial policy of the United States, and the organization and administration of the governments of Porto Rico and the Philippines.

24. Principles of Politics. *Two hours.* Professor CRANE.

A study of more advanced political ideas. Commencing with a brief consideration of the mediæval period, a study will be made of modern political theories as developed in Europe to the latter part of the nineteenth century; or at the choice of the class, a study prefaced by a brief consideration of English and French writers, will be made of American political theories.

Political Science 23, or its equivalent, is prerequisite to this course.

III. For Graduates.

10. Theory and Practice of Legislation. *Three hours.* Professor REEVES and Mr. LANE.

In this course an examination will be made of the great historical systems of legislation with special emphasis upon the development of legislative processes in England and America. The course is divided into two parts (1) the development of legislative methods and procedure and (2) a critical study of legislative form, the latter being introductory to practical training in bill-drafting.

14. Seminary in Political Science. *Two hours.* Professor REEVES.
A continuation of Course 13.

16. Journal Club in Political Science. *No credit given.* Professor Reeves. Continuation of Course 15.

18. Seminary in Municipal Administration. *Two hours.* Professor Crane. A continuation of Course 17.

20. Contemporary Political Theory. *Two hours.* Professor Crane. An advanced course for the consideration of what is actually being done today in the field of theoretical politics by English, French, German, and Italian writers, with an attempt to discover the directions of present day currents of political thought. The aim is to bring the students abreast of contemporary thought.

Courses 23 and 24, or their equivalent, are prerequisites to this course.

ECONOMICS

Political Economy. — The instruction in Political Economy is arranged to meet the needs of three classes of students. The first class comprises those whose principal work lies in other departments of instruction, but who desire a cursory introduction to the science. Students of this class are advised to take Courses 1 and 2 unless their time is very limited, in which case they may take Course 1*a* or 1E. The second class comprises those who desire to make a fairly thorough study of economics, but who have not time to take the advanced or the semi-professional work offered. Such students are advised to follow Courses 1 and 2 with one or more of the following: 3, 4, 9, and 15. The third class embraces those students who desire to make a thorough study of the science of economics, and especially those who wish to combine the study of political economy and finance with history, political science, and law for the purpose of preparing themselves for some one of the several professions or careers to which this group of studies naturally leads. Such persons will have no difficulty enlarging their program from the advanced electives.

It is very desirable that students specializing in economics should have a good reading knowledge of German and French. For second year work in those languages, therefore, such students should elect courses devoted to reading rather than to conversation and composition, and, in the case of German, these courses should be the ones specially arranged for students of history and the political sciences, viz., 3*a*, and 4*a*. Course 7*a* in the third year is also recommended.

Business Administration.—Special programs, on the completion of which the student will receive a special certificate in addition to his diploma, have been arranged to meet the needs of those students who wish to prepare themselves for a general business career or for particular lines of business, such as railway administration, insurance, accounting, and banking. These programs are printed in detail in a special announcement. Students who desire to enroll in one of these programs should consult with Professor SHARFMAN at the beginning of their university residence or as soon as possible thereafter.

Sociology. — Work in Sociology should begin, as a rule, with Course 19, followed by Course 20. The latter, however, may be taken first by those who find it more convenient to do so. Neither course can be taken before the junior year.

The Detroit Bureau of Associated Charities and social settlement afford special facilities to students, especially graduates, who may wish to carry on such studies as are practicable only in a large city.

Consultation Hours.—Throughout registration week, September 27 to October 4, Professor SHARFMAN, daily 10-12. Room 107, Ec.

During the year the instructors in the department will have consultation hours as follows:

Professor ADAMS, *M, W,* from 3 to 4. Room 105, Ec.

Professor TAYLOR, daily during the first two weeks of the semester at 8:45, 12, and 1:30; after the first two weeks, *Tu, Th,* at 11. Room 206, Ec.

Professor COOLEY, *M, W,* at 11, both semesters. Room 204, Ec.

Professor SHARFMAN, *Tu, Th,* 10 to 12. Room 107, Ec.

FIRST SEMESTER

Political Economy and Business Administration

1. Elements of Political Economy, I. Principles. Lectures, and recitations in sections. *Five hours.* Professor TAYLOR, Mr. MARSTELLER, Mr. IVEY, Dr. TUCKER, Mr. CALHOUN, Dr. WOLMAN, Mr. COWIN, and Mr. SCHMITT.

   This course should precede all other courses in Political Economy, except 1*a*, or 1E.

   The course will be repeated in the second semester, and it is hoped that a considerable number of persons will elect the course for that semester rather than for the first.

1*a*. General Economics. Lectures and quizzes. *Three hours.* Professor ADAMS.

   This course is designed for seniors and graduates, and for juniors who receive special permission, whose chief interest is in some other department and who have time for but one or two courses in economics. It is not open to students who have had or are taking Course 1 or 1E.

   The course covers a systematic study of industrial society, partly descriptive and partly analytic, and undertakes to explain the psychological and physical laws, and the social and business institutions, by which industrial conduct is controlled.

1E. Elements of Economics. Engineers' Course. Lectures, and recitations in sections. *Three hours.* Dr. WOLMAN.

This course is especially designed to meet the needs of students whose work lies in professional departments, particularly engineering. It will be devoted largely to a consideration of the fundamental economic principles. Some attention will be given, however, to the important practical problems of the economic world, particularly insofar as they illustrate these principles.

No student can receive credit for this course and Course 1 or Course 1*a*.

3. Labor Problems. *Three hours.* Dr. WOLMAN.

This course is designed to give the student a description of the place and problems of the wage earner in the present industrial system. It will consist of a brief survey of such labor problems as wages, hours of labor, child labor, and immigration. Attention will then be centered on collective bargaining as a device for the solution of these problems. And the remainder of the course will be devoted to an exhaustive discussion of the rise, structure, and methods of the parties to collective bargaining, trades' unions and employers' associations.

This course must be preceded by Course 1 or an equivalent.

4. Principles of Public Finance. *Three hours.* Dr. TUCKER.

This course treats of public expenditures, revenues, and debts. Some attention will also be given to budgets and treasury organization, but the stress of the course will fall on the principles and problems of taxation. Course 1 or 1*a* is a prerequisite, or else special permission of the instructor.

4*a*. Advanced Course in Public Finance. *Two hours.* Dr. TUCKER.

The work will consist mainly of reading and discussion of a more advanced sort than in Course 4, but there will also be a short report on some subject chosen by the student. After tracing the historical development of financial theory a comparative study will be made of the leading European systems.

Intended for students who have had Course 4 or 5, or an equivalent.

7. Essentials of Economic Theory. *Two hours.* Professor TAYLOR.

This course is intended to meet the needs of persons who wish to make a fuller study of the leading problems of economic theory than was feasible in Course 1. It should be taken by all students who expect to teach economic subjects. It will be required for admission to Courses 8, 13, 13*a,* 13*b,* etc.

This course must be preceded by Course 1 or an equivalent.

[8. History of Economic Thought. *Two hours.* Professor ———.

Open to seniors and graduate students; also to juniors who have completed Course 7. Omitted in 1916-1917.]

9. Money and Credit. *Three hours.* Professor DOWRIE.

A study is made of the principles which underly the institutions of money and credit, the emphasis being laid upon their relation to modern business conditions. The latter part of the course is given over to a study of the development of the monetary systems of the leading countries, special attention being given to the United States.

Prerequisite: Course 1 or its equivalent.

11. The Money Market. *Two hours.* Professor DOWRIE.

This is an advanced course open only to students who have completed Courses 9 or 10, or who have completed Course 10 and are taking Course 9 concurrently with Course 11. It is designed to meet the needs of students in business administration who desire a more intimate knowledge of the mechanism of the money market, especially in its relation to foreign exchange, investments, speculation, and crises. Special attention is given to current developments in finance which have a bearing upon the operations of the money market.

13*b*. Studies in Economic Theory. *Two hours.* Two sections. Sec. II is open only to instructors. Professor TAYLOR.

This course is given in a three-year cycle, appearing as 13, 13*b*, and 13*d* in the first semester, followed by 13*a*, 13*c*, and 13*e* in the second semester. This year they are elected as 13*b*, and 13*c*. Course 7 is a prerequisite.

The work consists of special studies in the leading problems of economic theory, such as the nature and origin of value, the laws of normal value, the origin of interest, the principles regulating distribution, and so on. Designed for graduate students; open to others only by special permission.

15. Corporations. Lectures, reading, and discussion. *Three hours.* Professor SHARFMAN.

This course undertakes a study of corporations as an element in industrial society, laying special emphasis upon the so-called trust problem and questions of government regulation of industry.

It deals with the forms of business organization, with particular stress on the nature and history of corporations and their significance in modern life. While it offers an account of the promotion, capitalization, and reorganization of corporations, questions of finance are for the most part subordinated to a consideration of the economic aspects of industrial combination, such as its effects upon efficiency, wages, profits, and prices. The course is concluded by a study of the Sherman Anti-Trust Act, as interpreted by the leading decisions under it, and a discussion of further legislation essential to a proper solution of the trust problem.

This course must be preceded by Course 1 or an equivalent.

17. Research Work.

This course is designed for students who desire to pursue independent research in connection with topics not covered in any other seminary. Supervision over this work will be assigned to that instructor in the department who is most interested in the subject chosen. This course may be elected only with the approval of the Head of the department. The credit allowed will depend on the amount and character of the work done.

29. Principles of Industry. *Three hours.* Dr. CLARK.

The object of this course is to sketch in broad outline the structure of modern industry, and to define the functions and the laws of efficiency of each great group of industries. Attention is given to the manner in which markets and industrial regions are organized. The course concludes with a comparison of various types of national economies, including both those of tropical, oriental, and frontier regions, and those of modern culture areas.

34. The Domestic Market. *Two hours.* Dr. CLARK.

In this course the American system of distributing and marketing products is presented. Attention will be given to the methods used in handling farm products, to the leading characteristics of manufacturers' distributive campaigns, and to wholesale and retail trade. In conclusion, the question of reorganizing the entire distributive system by the application of the principles of scientific management is considered.

Prerequisite: Economics 1 and 2.

35. Investments. *Two hours.* Mr. KOLBE.

This course will undertake a study of corporation reports with a view of finding the status and tendencies of the business corporations studied. It will also include an examination of government securities. Several books will be studied, such as Moody's *How to Analyze a Railroad Report.* Open only to students who have had Courses 1, 2, 38, and 40.

36. Railway Organization and Operation. Lectures, readings, and reports. *Three hours.* Professor ADAMS.

Students who elect this course will be expected to elect Course 36*a* in the second semester.

This course is designed for students who have a special or professional interest in railway operation and administration, and who desire to gain some knowledge of accounts and statistics as applied to railway construction, maintenance, operation, and valuation. It must be preceded by Courses 1, 2, 6, 38, and 39.

Graduate students or special students who desire intensive training in railway operation and administration may secure two hours additional work during the first semester by enrolling in Course 17.

37. Corporation Finance. Lectures, reading, and discussion. *Two hours.* Professor SHARFMAN.

This course aims to study the organization and intercorporate relations of modern railway and industrial enterprises, with special reference to problems of finance. It deals with such subjects as the nature and varieties of stocks and bonds, the price movements of corporation securities, corporate promotion, capitalization, and reorganization. Concrete cases, in the railway and industrial field, are carefully analyzed and discussed.

This course is open only to such students as have had Course 15 or are taking it at the same time with this course.

38. Principles of Accounting. Lectures, recitations, and laboratory. *Four hours.* Mr. RODKEY, Mr. KOLBE, Mr. LOUNSBURY, and Mr. SCHMITT.

40. Advanced Accounting Theory and Practice. *Three hours.* Mr. RODKEY.

Open to students who have completed Course 38, 38E, or 38L.

45. Introduction to Law. Lectures, reading, and discussion. *Three hours.* Professor SHARFMAN.

This course undertakes a study of the character and development of English-American law. The emphasis of the course is laid upon the general foundations of our legal system, specific applications of legal principles being introduced as illustrative material. It deals with the nature and sources of law, its growth and development, its relation to social progress and economic changes, and with the more important problems incident to the practical administration of justice.

This course is open to all persons who have had no work in law, either as a means of securing a general acquaintance with the character and development of law, or as an introduction to further study. It is particularly recommended to students who plan to take advanced work in economics or business administration.

48. Insurance Accounting. *Two hours.* Mr. LOUNSBURY.

Open only to students who are in their last year's study of Actuarial Science.

49. Mathematical Theory of Statistics (I). *Two hours.* Elect as Mathematics 49. Mr. CARVER.

The subjects treated in this course are averages, graphical representation of statistics, frequency curves, correlation, smoothing of statistics; with applications to statistical problems in economics, biology, insurance, and physics.

A knowledge of calculus is necessary.

51. Introduction to the Mathematical Theory of Interest, Insurance, and Statistics (I). *Three hours.* Elect as Mathematics 51. Professor GLOVER.

The aim of this course is to explain and illustrate the application of mathematics to financial transactions to such an extent as may be of interest and value to the general student.

It must be preceded by Courses 1 (or 1E) and 2 (or 2E).

The attention of students who desire to specialize in insurance or actuarial mathematics is called to a note concerning the arrangement of their work in this Announcement under Mathematics.

55. Advanced Mathematical Theory of Interest and Life Contingencies (I). *Four hours.* Elect as Mathematics 55. Professor GLOVER.

For further information see Course 55 in Mathematics.

65. Casualty Actuarial and Statistical Mathematics (I). *Two hours.* Elect as Mathematics 65. Mr. CARVER.

Sociology

19. Principles of Sociology. Lectures, quiz, and thesis. *Four hours.* Professor COOLEY, Dr. THOMPSON, and Mr. PETERSON.

By special permission, students may elect this course as 19*a*, *three hours,* without the quiz.

This course aims at a systematic study of the underlying principles of social science. The general plan followed is to begin with personal relations in their simplest and most direct form, proceeding thence to the more complex forms of association. Historical references are freely used, but the main purpose is a rational interpretation of existing society, and ample contemporary illustration is given of the principles advanced. While some attention is paid to the differing views of prominent writers, the course, in the main, is constructive, rather than critical. Cooley's *Human Nature and the Social Order* and *Social Organization* are used as collateral reading.

Each student is required to write a thesis, which must be based in part on personal observation.

19*g*. Principles of Sociology for Graduate Students. The lectures are the same as for Course 19. A special quiz section is conducted by Professor COOLEY. The thesis is expected to be of higher grade than in the undergraduate course.

21. Social Evolution. *Three hours.*

The aim of this course is to show the organic unity of society by a study of its evolution. The origin and development of social institutions and their effects upon the whole social life are the main topics to which attention is given. Special emphasis is laid upon the psychological aspects of social development. The material used is largely anthropological.

Special permission must be secured to enter this course if the student has not had Course 19 or 20.

23. Seminary in Principles of Social Work. *Two hours.* Professor COOLEY.

This course is intended for those who mean to follow some phase of social work as a profession. Each student is assigned a special line of study on which he makes a series of reports. Special permission must be obtained before electing the course. Graduate students may be assigned additional work and receive *three hours'* credit.

23*b*. Seminary in Social Work for Boys. *One hour.* Professor COOLEY.

For men who have had experience in boys' work and wish to supplement it by reading and discussion. Special permission is required.

25. Seminary in Social Process. Advanced study of sociological theory. Intended especially for candidates for the Doctor's degree. *Two hours.* Professor COOLEY.

26. Social Statistics. *Three hours.* Dr. THOMPSON.

This course is intended for students of economics and sociology who want to secure training in exact methods of studying problems in these fields. The methods of using and presenting large bodies of facts, the sources of social and economic statistics, and the forms of graphical representation constitute the subject matter of the course. The student is also required to work out some definite problem and present his results to the class.

No special knowledge of mathematics is necessary.

SECOND SEMESTER

Political Economy and Business Administration

1. Elements of Political Economy, I. Principles. Lectures, and recitations in sections. *Five hours.* Professor TAYLOR and Mr. MARSTELLER.

This is a repetition of Course 1 of the first semester.

1E. Elements of Economics. Engineers' Course. Lectures, and recitations in sections. *Three hours.* Dr. WOLMAN.

This is a repetition of Course 1E of the first semester.

2. Elements of Political Economy, II. Current Problems. Lectures, and recitations in sections. *Five hours.* Professor ADAMS, Mr. IVEY, Dr. TUCKER, Dr. WOLMAN and ——————.

This course is a continuation of the Elements of Political Economy given in the first semester. Students who have taken Course 1*a* or 1E during the first semester will be permitted to elect this course as a *three hour* course, but the instructor reserves the right to exclude those who failed to do high grade work in Course 1*a* or 1E.' Such students will be excused from the quiz sections, but will be required to write eight bluebooks during the semester (at hours, other than the lecture hours, to be arranged), and to pass satisfactorily an examination covering the work of the lectures and the assigned readings. This examination will be different from the examination sustained by those who receive five hours' credit.

The purpose of this course is to apply economic principles to current social and industrial problems and to make clear the historic background of such problems. The subjects discussed will include an outline of the development of industrial society, crises and depressions, taxation, the tariff problem, immigration, the labor problem, and a comparative study of programs of social reform which spring from industrial conditions.

3*a*. Social Insurance. *Three hours.* Dr. WOLMAN.

Emphasis will be placed in this course on social insurance as a possible solution of the problems of labor. The discussion will deal with an analysis of such problems as unemployment, industrial accidents, and superannuation, and then with the systems of unemployment insurance, accident insurance, and old age pensions operative in the continental countries and in the United States.

This course must be preceded by Course 3 or an equivalent.

4*b*. Seminary in Public Finance. *Two hours.* Dr. TUCKER.

Among the topics studied in 1917 particular attention will be given to public debts and budgets. A thesis will be required. Open only to advanced students of finance.

5. Taxation in the United States. *Two hours.* Dr. TUCKER.

In this course will be taken up the salient features of American taxation especially in the states and municipalities. Much attention will be paid to the leading proposals for reform, in Michigan and elsewhere, such as the single tax, the tax on unearned increment, exemption of buildings, classification of property, income and inheritance taxes. Course 4 is a prerequisite, or else special permission of the instructor.

6. Railway Problems. Lectures, reading, and discussion. *Three hours.* Professor SHARFMAN.

This course considers the social and industrial significance of modern transportation, traces the deevlopment of railway transportation, analyzes the chief railway problems in the United States, with special reference to the nature of railway competition and the theory and practice of rate-making, and devotes particular attention to the regulation of railways by the Interstate Commerce Commission.

This course must be preceded by Course 1 or an equivalent.

7. Essentials of Economic Theory. *Two hours.* Professor TAYLOR. Repeated from first semester.

This course must be preceded by Course 1 or an equivalent.

[8*a*. History of Economic Thought. *Two hours.* Professor ———.

This course is a continuation of Course 8 given in the first semester. Open to seniors and graduates also to juniors who have completed Courses 7 and 8. Omitted in 1916-1917.]

10. The Principles of Banking. *Three hours.* Professor DOWRIE.

This is a general course designed to meet the needs of persons who desire to become acquainted with the most important features of the institution of banking, with special reference to American conditions. A study is made of the theory of banking and the character of its development in the leading countries. This course must be preceded by Course 1 or its equivalent.

12. Practical Banking Problems. *Two hours.* Professor DOWRIE.

This course is open to seniors and graduate students who have had Courses 9, 10, and 11, and are preparing to enter banking or a related business. An intensive study will be made of the most important problems connected with bank organization and administration.

13*c*. Studies in Economic Theory. *Two hours.* Two sections. Sec. II, open only to instructors. Professor TAYLOR.

For details see announcement for first semester.
Course 7 is a prerequisite.

16. Public Service Industries. Lectures, reading, and discussion. *Two hours.* Professor SHARFMAN.

This course considers the nature of public service industries, such as railroads, street railways, gas and electric companies, telephone and telegraph companies, and their relation to the state and to the municipality. The problem of public ownership and public control is given careful study on the basis of American and European experience, with special consideration of commission regulation in the United States.

This course is open only to such students as have had Course 6 or are taking it at the same time with this course.

18. Research Work.

This course is designed for students who desire to pursue independent research in connection with topics not covered in any other seminary. Supervision over this work will be assigned to that instructor in the department who is most interested in the subject chosen. This course may be elected only with the approval of the Head of the department. The credit allowed will depend on the amount and character of the work done.

31. The Methods of Foreign Trade. *Two hours.* Dr. CLARK.

In this course the position of the United States in the world's trade will be reviewed. Special attention will be given to the methods used by England and Germany in building up foreign trade, and to the present conditions and opportunities of Latin-America.

32. Business Organization and Management. Lectures and recitations in sections. *Three hours.* Dr. CLARK.

A study of the organization and management of business enterprises from the point of view of scientific management. Consideration is given to launching, preliminary finance, location, and layout, and to the organization of the administrative staff. Present standard practice in operation will be considered with reference to purchasing, cost accounting, production, traffic, selling, credit, etc. Special emphasis is placed on the study of systems of managing and remunerating labor.

Prerequisites: Economics 1 and 2. Juniors and seniors of other departments may be admitted without these prerequisites, by special arrangement.

[32*a*. General Principles of Administration. *Two hours.* Professor JONES.

A series of studies of great administrators will be arranged for advanced students. The object is to distinguish and formulate general principles of supervision or control, as they are revealed in various forms of joint action, such as military strategy, statecraft, diplomacy, adventure, and industry. Assigned topics for independent work and class discussions. Special permission must be obtained before electing this course. Omitted in 1916-1917.]

36*a*. Railway Accounts. Lectures, readings, and reports. *Three hours.* Professor ADAMS.

For a description of this course, see Course 36, given in the first semester, of which it is a continuation.

38. Principles of Accounting. Lectures, recitations, and laboratory. *Four hours.* Mr. RODKEY and Mr. LOUNSBURY.

38E. Principles of Accounting. Course for Engineers; not open to literary students. Lectures and recitations. *Three hours.* Mr. RODKEY and Mr. ————.

38L. Principles of Accounting. Course for literary students who intend to enter law. Lectures and recitations. *Three hours.* Mr. KOLBE.

38P. Elements of Accounting. Pharmacy Course. Quiz and laboratory. *Two hours.* Mr. LOUNSBURY.

Literary students not admitted.

39. Cost Accounting, Principles and Problems. Quiz and laboratory. *Two hours.* Mr. KOLBE.

40. Advanced Accounting Theory and Practice. *Three hours.* Mr. RODKEY.

This is a repetition of Course 40 given in the first semester, and is a continuation of Course 38.

[41. Advanced Accounting Theory with Special Reference to Valuation and Public Control. *Two hours.* Professor ————. Omitted in 1916-1917.]

42. Municipal Accounting. *Two hours.* Mr. KOLBE.

43. Auditing and Accounting Systems. *Three hours.* Mr. RODKEY.

46. The Law of Contracts. Lectures, reading, and discussion of selected cases. *Three hours.* Mr. MARSTELLER.

This course is designed to meet the special needs of students in business administration. It aims to develop the underlying principles of the law of contract, with special emphasis upon their practical application in ordinary business dealings. Little stress is laid upon the historical development of the various doctrines, and practically no attention is paid to questions of procedure.

The course takes up, in turn, a study of the nature of contract and its relation to other legal conceptions, the elements essential to the formation of a valid contract, the parties affected by the operation of a contract, the rules and principles employed by the courts in the construction of the terms of a contract, and the various means by which contractual obligations may be discharged.

This course is not open to students intending to enter the Law School.

47. The Law of Commercial Paper. Lectures, reading, and discussion of selected cases. *Two hours.* Mr. MARSTELLER.

This course, like the one on the law of contracts, is designed to meet the special needs of students in business administration. It undertakes a study of the law relating to instruments of credit, particularly bills of exchange, promissory notes, and ordinary checks. The Negotiable Instruments Law serves as a basis of the work. The nature of negotiable instruments. the rights and liabilities arising from their transfer, the formalities essential to recovery upon them, and the defenses against the holder available to the various parties involved, will each be taken up in turn.

This course is open only to such students as have had Course 46 or are taking it at the same time with this course.

This course is not open to students intending to enter the Law School.

48*a*. Insurance Accounting. *Two hours.* Mr. LOUNSBURY.

This course is a continuation of Course 48, given the first semester, and is open only to those who have satisfactorily completed the first semester's work.

50. Mathematical Theory of Statistics (II). *Two hours.* Elect as Mathematics 50. Mr. CARVER.

52. Introduction to the Mathematical Theory of Interest, Insurance, and Statistics (II). *Three hours.* Elect as Mathematics 52. Professor GLOVER.

Course 52 is open to those who have completed Courses 1 and 2 (or 1E and 2E) and 51 in Mathematics.

56. Advanced Mathematical Theory of Interest and Life Contingencies (II). *Four hours.* Elect as Mathematics 56. Professor GLOVER.

66. Casualty Actuarial and Statistical Mathematics (II). *Two hours.* Elect as Mathematics 66. Mr. CARVER.

Sociology

20. Problems in Sociology. Lectures, quiz, and thesis. Professor COOLEY, Dr. THOMPSON, and Mr. PETERSON.

By special permission students may elect this course as *20a, three hours,* without the quiz.

The general subject is the struggle for higher levels of human living. A discussion of the organic conception of social problems is followed by studies of degeneration, eugenics, social phases of education, charities, urban and rural conditions, immigration, dissipation, crime, and questions relating to the family.

Each student is required to write a thesis, which must be based in part on personal observation.

20*g*. Problems in Sociology for Graduate Students. The lectures are the same as for Course 20. A special quiz section is conducted by Professor COOLEY. The thesis is expected to be of higher grade than in the undergraduate course

22. The Social Problems of Rural Life. *Two hours.* Dr. THOMPSON.
In this course the nature, causes, and solutions of the problems of rural communities are considered. It embraces a study of farmers' associations, the rural school, the country church, and other factors in our rural life.
This course must be preceded or accompanied by Course 19 or 20

23*a*. Seminary in Principles of Social Work. *Two hours.* Professor COOLEY.
This course is intended for advanced students who are preparing to follow some phase of social work as a profession. Each student is assigned a special line of study on which he makes a series of reports. Special permission is required before electing the course. Graduate students may be assigned additional work and receive *three hours* credit.

23*c*. Social Development of the Church. Open to advanced students by special permission. *One hour.* Professor COOLEY.
This course is designed to give students intending to enter the ministry, or others specially interested in the church, an opportunity for study and discussion of the relation of the church to the rest of society. It must be preceded by Course 19, and is conducted as a seminary.

25*a*. Seminary in Psychological Sociology. Advanced study of theory. Intended especially for candidates for the Doctor's degree. *Two hours.* Professor COOLEY.

27. Immigration. *Two hours.* Dr. THOMPSON.
Open to juniors and seniors.

PHILOSOPHY

Candidates for the higher degrees, with major or minor in Philosophy, are requested to communicate with Professor LLOYD as soon as possible, stating their proposed course of study, the subject of thesis, etc.

Related Courses.—Various departments offer courses of special value to students of philosophy. The instructors will be glad to point out the more useful related courses to any student who may make application.

Morris Seminary Rooms.—The greater part of the carefully selected philosophical library of the late Professor George S. Morris (presented to the University by Mrs. Morris) has been removed to Mason Hall, the North Wing of University Hall, where Rooms 102 to 106 are Seminary Rooms for advanced courses. Through the continued generosity of Mrs. Morris important additions were made to the Library in 1914-1915.

Philosophical Society.—The Acolytes is a society to which students, who have distinguished themselves in philosophy, may be elected on recommendation of the faculty.

Psychological Laboratory. — The Psychological Laboratory occupies forty rooms of various sizes in the Natural Science building. The rooms are amply supplied with water, gas, high and low voltage currents to furnish power and to replace primary batteries in ordinary experiments.

The equipment includes a complete set of the apparatus required for demonstration and class use, models of the brain and sense organs, a full set of reaction-time instruments, and an unusually large collection of pieces for use in recording the bodily expressions during affective states. The laboratory is also particularly well equipped for experiments on sound, but not to the exclusion of an adequate supply of instruments for work in other lines. Such apparatus as is needed for advanced work or research will be procured as required, and many of the newest appliances are added each year. Every facility and encouragement are offered to students of sufficient preliminary training to undertake investigations on some special problem.

Important Notice to Students.—There is such wide diversity in the preparation, needs, and aims of individual students that the Philosophical department cannot lay down inflexible rules with regard to the sequence of its courses; *all students are advised urgently to consult freely with the instructors.* Courses 1, 2 (*a*, *b*, *c*), 3, 4, 4*a*, 5 (*a*, *b*, *c*), 6, 7, 8 (*a*, *b*), 9, 9*b*, and 9*c* precede all others; and any one of them may be chosen as the avenue of entrance to the department and as introducing to other courses. This rule does not apply to students coming with advanced credit, or to special students; all such cases will be decided individually, according to certified attainments and personal requirements. Starred courses should not be elected without consultation.

The following general advice may be given. If possible, students should elect one (preferably Course 1) or more of the nine Introductory Courses in the first or second semester of the sophomore year. If Course 2 (*a* etc.), 3, 4, 4*a*, 5 (*a* etc.), 6, 7, 8 (*a* etc.), 9, or 9*c*, be chosen, it ought to be followed by Course 1. Courses 10-20 inclusive are Second Courses, and, with exceptions noted for separate cases as below, may be elected after any one of the Introductory Courses. Courses 12 and 13 should be elected in conjunction with Course 11*a*. Courses 11*c*, 11*d*, 11*e*, 11*f*, 18, 21, and 22 should be elected in conjunction with Course 11*b*. The Psychological Courses (8*b* and 24-30) are subject to special arrangements which may be learned on inquiry.

Students desirous of specializing in Philosophy must begin with

Course 1, which should be followed by Courses 9, or 9*c*, 11*a*, 11*b*. Further work will be mapped out to meet particular needs.

The following courses are suggested as profitable for particular classes of students: For classical students, Courses 1, 2 (*a* etc.), 6, 11*a*, 12, 13, 16, 26; for students of English and other European Literatures and Rhetoric, 1, 2 (*a*, etc.), 5 (*a* etc.), 6, 11*c*, 12, 16; for students of Economics and Administration, 1, 2 (*a* etc.), 5 (*a* etc.), 9, 14*a*, and *b;* for students of History, 1, 2 (*a* etc.), 5 (*a* etc.), 11 (*b, c, e, f*), 14*a* and *b;* for students on the Combined Literary and Law Curriculum, 1, 2 (*a* etc.), 5 (*a* etc.), 9, or 9*c*, 10, 14*a*, and *b;* for students on the Combined Literary and Medical Curriculum, 3, and the courses in Psychology; for students of the Sciences, 1, 3, and (for biological students) courses in Psychology; for students of Architecture, 1, 6, 16*b*. Students preparing for theological seminaries are advised to elect Courses 1, 2 (*a* etc.), 5 (*a* etc.), 9, or 9*c*, 10, 15, 13*b*, and courses in the History of Philosophy.

Students preparing to teach Psychology are required to take Courses 1, 8*c*, 8*f*, 9, 11*b*, 24, 25, 27, and Anatomy, Course 4 (Anatomy of the Nervous System). Students preparing to teach, whether Psychology or not, are advised to elect Courses 1, 7, 12, 24, and 25.

Consultation Hours.—(a) At beginning of the first semester, to aid students in making their elections, *W*, Sept. 27, to *W*, Oct. 4, 1916, at 11-12 A. M., in the Morris Reading Room, 106, M. H.

At the close of the first semester, the following consultation hours will be held to aid students in making their elections for the second semester: *W, Th, F*, 24th, 25th, 26th, Jan., 1917, at 11-12 A. M., in the Morris Reading Room (106, M. H.).

Consultation hours of the staff for both semesters will be announced.

First meeting of courses announced *with hours to be arranged*:—

First Semester:—(a) All undergraduate courses in Philosophy in the Morris Reading Room (106 M. H.) on *W*, Oct. 4th, 1916, at 1 P. M., to fix hours.

(b) All undergraduate courses in Psychology in the Psychological Laboratory on *Th*, 5th Oct., 1916, at 1 P. M., to fix hours.

Second Semester:—(a) All undergraduate courses in Philosophy in the Morris Reading Room (106, M. H.), on *Tu*, 13th Feb., 1917, at 1 P. M., to fix hours.

(b) All undergraduate courses in Psychology in the Psychological Laboratory on *W*, 14th Feb., 1917, at 1 P. M., to fix hours.

Departmental Adviser. — Assistant Professor VIBBERT will act as Adviser to Philosophical students during the first semester. He will be in the Morris Reading Room (106, M. H.), *Tu*, 10-11, and *F*, 12, (a) to give out books, from the Morris Library, (b) to advise with students particularly as to books recommended for reading, and to literature to be consulted for exercises and theses.

Professor WENLEY will act as Adviser during the second semester. His hours will be announced at the beginning of the semester.

FIRST SEMESTER

I. Introductory Courses.

1. Philosophical Introduction. Lectures, discussion sections, exercises. *Three hours.* Professor WENLEY, Assistant Professors VIBBERT and SELLARS, and Mr. DEBOER.

The object of this course is to explain to beginners in the most elementary manner possible, the meaning, interest, and scope of philosophy; to compare its outlook with other standpoints, such as those of the average man (common-sense), of history, and of science (including psychology). Text-book: *Introduction to Philosophy,* Jerusalem (Macmillan). This is a *three-hour* course: every student will attend one discussion section per week; this in addition to the two lectures; after the beginning of the semester, the class will be divided into sections for this purpose, and each student will have an opportunity of electing the hour most suitable for the section work. Professor WENLEY.

2*k*. Principles of Ethical and Social Evolution. *Two hours.* Professor WENLEY.

This course is intended specially for (1) students of literature, ancient and modern, and (2) students of sociology, history, and politics. It is one of the courses recommended to students of commerce and public administration. Subject in 1916: Ethical Conditions in the Roman Empire during the Spread of Christianity. Students are advised that *three* courses fall under 2, viz., *2a, 2b,* etc. As each course is complete in itself, all may be elected, and in any order. They deal with phases of ethical and social development prior to the French Revolution. To be followed by courses under 5 (which see). Text-book, Brett's *The Government of Man* (Macmillan); collateral reading; one thesis.

3*a*. The Principles and Main Concepts of Science. *Three hours.* Assistant Professor SELLARS.

This course is designed primarily for students of Physics, Chemistry, and Biology, but is open to all who are interested in the philosophical aspects of science. The Postulates of science; the methods of science; the main concepts employed. Text-book, Sellars' *Critical Realism.*

4*a*. Contemporary Metaphysics. Lectures, discussions, and a thesis. *Three hours.* Assistant Professor VIBBERT.

A study of the main anti-intellectualistic tendencies in contemporary thought, such as Pragmatism, the Spiritualism of Bergson, the Philosophy of Nietzsche, et al.

7. Elementary General Psychology. One lecture and two discussion sections with reports on outside reading. Text-book, Pillsbury, *Essentials of Psychology*. *Three hours.* Professor PILLSBURY, Dr. ADAMS, and Dr. FROEBERG.

A rapid survey of the facts of mind. Intended primarily for students of pedagogy, but open to others who are not interested in the experimental and physiological aspects of Psychology.

8*a*. Introductory Physiological and Experimental Psychology. Sensation, Attention, Association. Lectures and quizzes. *Three, four, or five hours.* Professors PILLSBURY and SHEPARD, and Dr. ADAMS.

It is suggested that six-year literary-medical students, students of biology, and others who desire more than the rudiments of psychology begin their work with this course. Lectures, discussion, and laboratory work. It may be elected as 8*a* (*three hours*) without laboratory work, as 8*c* (*four hours*), with two lectures and four hours of laboratory work, or as 8*e* (*five hours*), with three lectures and four hours of laboratory work. Students who have had previous work in psychology and desire only the laboratory work and discussion sections may also elect it as a three-hour course. Text-book: Pillsbury: *Fundamentals of Psychology.*

II. Course in Logic.

9. Introduction to Logic. Lectures, collateral reading, and text-book work. Text-book: Sellar's *Essentials of Logic.* Course 1 is the natural prerequisite to this course. *Three hours.* Assistant Professor SELLARS.

9*c*. Introduction to Logic. Lectures, collateral reading, and text-book work. A study of the theory of reflective thought and the principles of argumentation. Course 1 is the natural prerequisite to this course. *Two hours.* Assistant Professor VIBBERT.

*10. Advanced Course in Logic. *Three hours.* Assistant Professor PARKER.

An introduction to the study of fundamental logical concepts. The elements of the theory of propositions, classes, relations, series, number, quantity, and space. The logical basis of the exact sciences. Lectures, reading, and reports.

Follows Course 3*a*, 7, or 9.

III. Courses in History of Philosophy.

11*a*. History of Ancient Philosophy from Thales through Aristotle. Lectures, reading, exercises. *Three hours.* Professor LLOYD.

Open to approved students who have had any one of the introductory courses or an equivalent.

11*c*. Kant, Hegel, and Anglo-American Idealism after 1865. *Two hours.* Professor WENLEY.

This course covers the second main period in the history of Modern Philosophy. The aim is to exhibit the nature of German Idealism, and to outline its widespread influence in the English-speaking countries. Text-books: Wenley's *Kant and His Philosophical Revolution* (Scribner), and Caird's *Hegel* (Lippincott). Pro-seminar.

12. The Philosophy of Plato. *Two hours.* Assistant Professor PARKER.

A study of the chief Dialogues (in translation). Lectures, discussions, and prescribed reading.

IV. Special Courses.

Movements of Thought in the 19th Century. *Two hours.* Assistant Professor VIBBERT. Given alternately as

13*a*. German Pessimism in the 19th Century. A detailed study of the works of Schopenhauer, von Hartman, and Nietzche with reference not only to their philosophical but also to their general literary and social significance. *Two hours.* Assistant Professor VIBBERT.

[13*b*. Pragmatism. Assistant Professor VIBBERT. A critical study of the contemporary movement in Anglo-American Philosophy, in its two main lines of development:—(1) Professor William James, and Dr. F. C. S. Schiller; (2) Professor Dewey and his pupils. Examination of problems such as, the Practical Criterion of Truth, the Unmediated Character of Experience, the Making of Reality, the Plural Nature of the Universe. Lectures, discussions, and a thesis. Omitted in 1916-1917.]

14*a*. Political Philosophy. Lectures, discussions, theses. *Two hours.* Professor LLOYD.

A history of the theories of society, ancient and modern. Attention will be given especially to the contract theory of the seventeenth and eighteenth centuries. Students who have had Course 1; or Courses 11*a, b,* or *c;* or Courses 2*a, b,* or *c,* and 5*a, b,* or *c,* or Courses 5*a, b,* or *c,* and 20, will be admitted. These form a minimum preparation; but two courses in philosophy proper (*e. g.,* Courses 1 and 2*a, b,* or *c;* or 1 and 5*a, b,* or *c;* or 1 and 20) are strongly recommended as preparation.

[15. Philosophy of Religion. Lectures, prescribed reading, and exercises. *Two hours.* Professor WENLEY.

This course is recommended to students who propose to follow the ministry, and to those who are interested in the relation of religion to modern life. Any two courses in Philosophy, Psychology, or Sociology, are prerequisite. Omitted in 1916-1917.]

16. Aesthetics. Lectures, prescribed reading, and a thesis. *Three hours.* Assistant Professor PARKER.

The definition, forms, and standard of Beauty. The application of general æsthetic principles in poetry and the fine arts. The relation of art to science, morality, religion, and philosophy. Lectures, reading and a thesis.

[*17*a*. Logic and Theory of Knowledge. *Two hours.* Professor LLOYD.

A study of fundamental problems, with special reference to the grounds of realistic experience. The course is open only to approved students familiar with the general history of philosophy. Lectures, exercises, and collateral reading. Omitted in 1916-1917.]

[18. Contemporary Ethical Problems. *Three hours.* Assistant Professor SELLARS.

This course will concern itself with the vital ethical and social problems of the present. So far as possible the subjects taken up will be given an historical setting. Omitted in 1916-1917.]

V. Courses in Psychology.

24. Advanced Systematic Psychology. Lectures on attention, association and the more complicated mental process. *Three hours.* Professor SHEPARD.

*24*d*. Advanced Psychology of Advertising. *Two or more hours.* Dr. ADAMS.

Primarily for graduates. Reports on the literature of the subject and laboratory work on the more important psychological phases of advertising.

24*g*. Business Psychology. *Two hours.* Dr. ADAMS.

This course will deal with the business implications of psychology, touching briefly on the principles involved in advertising, salesmanship, the tests which have been adopted for the selection of employees, and the incentives which make for greater efficiency.

25*b*. Experimental Esthetics. *Two hours.* Dr. ADAMS.

This course is intended primarily for students of advertising. It will take up the various esthetic principles involved in make up of advertisements. The following points will be considered: color preference, color harmony, the meaning of colors, preference for different proportions of figures, the harmony between colors and figures, balance, symmetry and the principles of artistic composition, 25*c*. Methods of Mental and Social Measurements. *Two hours.* Dr. FROEBERG.

Deals with the technical and statistical methods used in the study of mental, educational and social problems. Among other topics the course will include measurement of variable facts, measurement of changes, measurement of groups, measurement of relations, correlation, reliability of measurements, tables and surfaces of frequency, graphic methods. Lectures, reports, and the application of the methods to actual problems.

[*26. The Psychology of Language. Among the subjects treated are the laws of thought and language, the history of linguistic theory, language as a form of expression, the genesis of speech, and the psychology of syntax. Elect as General Linguistics 26. *Two hours.* Professors PILLSBURY and MEADER. Omitted in 1916-1917.]

Professor SCOTT will give four lectures on the origin of language.

*26*a*. History of Modern Psychology. Primarily for graduates. Will present the more important tendencies in psychology since Descartes, in an endeavor to give an historical origin of current theories. *Two hours.* Professor PILLSBURY.

27. Psychology of Memory. A study of the recent memory investigations. The results, methods, and instruments will be studied, and some of the more important experiments will be repeated. Some time will also be devoted to a study of the experimental investigations of legal evidence, the *Aussage* experiments of Stern and others. *Two hours.* Professor PILLSBURY.

[*29. Psycho-physical Methods and Laboratory Technique. Discussion and laboratory work. *One hour.* Professor SHEPARD. Omitted in 1916-1917.]

*30. Advanced Course in Experimental Psychology. Original investigation. *Credit to be arranged.* Professors PILLSBURY and SHEPARD, and Dr. ADAMS.

*31. Psychological Journal Club. The members of the teaching staff and the graduate students in psychology will meet every other Thursday to review the current literature.

VI. Graduate Seminaries.

*—. Graduate Seminaries. These are arranged in order to give flexibility to the special work of graduate students whom the announced graduate courses do not suit. The work in them will be apportioned as follows:

(1). Ancient Philosophy:—
  a. Origins to Socrates. Professor LLOYD.
  b. The Platonic Philosophy. Assistant Professor PARKER.
  c. The Aristotelian Philosophy. Assistant Professor SELLARS.
  d. The Hellenistic Period—Græco-Roman Schools and Movements. Professor WENLEY.
  e. Neo-Platonism. Assistant Professor PARKER.

(2). Mediæval Philosophy. Assistant Professor PARKER.

(3). Modern Philosophy:—
  a. Renaissance—Cartesian Period to Leibniz. Professor LLOYD.
  b. The Critical Philosophy of Kant. Professor WENLEY.
  c. British Empiricism, First Period. Assistant Professor SELLARS.
  d. German Philosophy since Hegel. Professors WENLEY and LLOYD, Assistant Professors VIBBERT and SELLARS.
  e. French Philosophy in the Nineteenth Century, First Period. Assistant Professor VIBBERT.

(4). Metaphysics. Professors WENLEY and LLOYD, Assistant Professors VIBBERT, SELLARS and PARKER.

(5). Logic. Professor LLOYD, Assistant Professors VIBBERT, SELLARS and PARKER.

(6). Epistemology. Assistant Professors VIBBERT and SELLARS.

(7). Ethics. Professor WENLEY and Assistant Professor VIBBERT.

(8). Philosophy of Religion, First Period, to Kant. Professor WENLEY.

(9). Æsthetics. Subjects in the philosophy and psychology of Beauty and Art will be selected for study in accordance with the needs of advanced students. Assistant Professor PARKER.

(10). Political Philosophy. Professor LLOYD.
All hours to be arranged. Morris Seminary Rooms, 102, 104, 106, M. H.

(11). Psychology—Systematic and Experimental, Abnormal and Pathological. Professors PILLSBURY, SHEPARD, BARRETT, and CAMP, Dr. ADAMS, and Dr. FROEBERG.
All hours to be arranged. Psychological Laboratory and Psychopathic Ward.

SECOND SEMESTER

I. Introductory Courses (see notice prefixed to announcement of courses in this department.)

1. Philosophical Introduction. *Three hours.* Same as in first semester (which see). Professor WENLEY, Assistant Professors VIBBERT and SELLARS, and Mr. J. J. DEBOER.

5*k*. Ethics of Social Evolution: a Study of Ethical Types as seen in Social and Industrial Relations. *Two hours.* Professor **Wenley.**

This course is designed specially for students of (1) history, (2) law and sociology, (3) commerce and administration. The problems will be approached from the standpoint of social organizations. The ethical significance of social, and political institutions will be considered, also the relation of these institutions to the conditions of moral progress and stability in a society. Questions will be set for the individual consideration of students, with reference to the line of study they are pursuing. Subject in 1916-1917: Dominant Ethical Movements in the Nineteenth Century. Text-book: Mackenzie's *Introduction to Social Philosophy* (Macmillan). Students are advised that *three* courses fall under 5, viz., 5*a*, 5*b*, 5*c*. As each course is complete in itself, all may be elected, and in any order. They deal with phases of ethical and social development subsequent to the French Revolution.

6. The History of Æsthetics. *Three hours.* Assistant Professor **Parker.**

The development of æsthetic theory in relation to the contemporaneous social, philosophical, and artistic movements. The analysis and discussion of representative contributions to this theory. Special attention will be paid to the modern period beginning with Kant. Lectures, reading, and reports.

7. Elementary General Psychology. Same as in first semester (which see). *Three hours.* Professor **Pillsbury**, Dr. **Adams**, and Dr. **Froeberg.**

9*b*. Introduction to the Logic and Methods of Science. Lectures, readings, and reports. *Two hours.* Assistant Professor **Vibbert.**

A study of the procedure by which we construct on the basis of our sense data the rational system of science; the testing of evidence, the role of hypothesis, the function of the categories, the classification of the sciences, etc. Course 1 is the natural prerequisite to this course.

9. Introduction to Logic. Lectures, collateral reading, and textbook work. Text-book: Sellars' *Essentials of Logic.* Course 1 is the natural prerequisite to this course. *Three hours.* Assistant Professor **Sellars.**

II. Courses in History of Philosophy.

11*b*. History of Modern Philosophy from St. Augustine, through Kant. Lectures, reading, and reports. *Three hours.* Professor **Lloyd.**

The course is open to approved students who have had any one of the introductory courses or an equivalent. Course 11*a*, while not required, furnishes desirable preparation for this course.

[11*e*. British Evolutionism and German Neo-Kantianism after 1850. *Two hours.* Assistant Professor SELLARS.

Omited in 1915-1916.]

11*f*. Contemporary French Philosophy. *Three hours.* Assistant Professor VIBBERT.

A detailed study of the work of the thinkers who are influencing most profoundly contemporary thought, Boutroux and Bergson. In many respects this is the most vital thought movement of the present day.

13*c*. The Philosophy of Aristotle. *Two hours.* Assistant Professor PARKER.

Aristotle and the completion of Greek thought. The Fundamental Principles of his System. The Parts of the System. Aristotle's relation to subsequent thought.

III. Courses in Ethics.

[9*a*. The Ethics of German Idealism. *Two hours.* Assistant Professor PARKER.

A study of the ethical systems of Kant, Fichte, and Hegel, in relation to the general philosophy of these thinkers. Lectures, reading, and reports. Omitted in 1916-1917.]

19. Problems of Human Conduct. *Two hours.* Professor LLOYD.

A study of the moral ideal, motive and judgment, of conscience and will. An elementary course in ethical theory, partly historical and partly critical and constructive, which is open to all students who have had any one of the introductory courses in philosophy, or an equivalent.

IV. Special Courses.

4. Metaphysics. *Three hours.* Assistant Professor PARKER.

A study of ultimate problems; the issues between empiricism and rationalism, idealism and realism, monism and pluralism. The categories and inter-relation of the physical, personal, and logical forms of Reality. Lecture, readings, and reports.

14*b*. Political Philosophy—special course. *Two hours.* Professor LLOYD.

A critical study of society; the principles of political association and evolution; progress, the relations of political and industrial institutions to fundamental ideas of philosophy and religion; the personal and the social. This course is recommended to students of history, to those who have had or intend to take Course 14*a*, and to students of economics and sociology.

14*c*. A Critical Examination of Socialism. *Three hours.* Assistant Professor SELLARS.

The stages in socialist thought; the principles of socialism; misconceptions of socialism; what socialism hopes to accomplish; objections to socialism; the relativity of socialism; the control of industry; socialism and democracy. Lectures, assigned readings and discussions. Text book, Sellars, *The Next Step in Democracy.*

[17*b*. Logic and Theory of Knowledge. Lectures, exercises, and collateral reading. A continuation of 17*a;* but may be elected (after consultation) by students of sufficient preparation who have not had 17*a*. *Two hours.* Professor LLOYD. Omitted in 1916-1917.]

*23. Philosophy of Valuation. Lectures, discussions, and a thesis. *Two hours.* Assistant Professor VIBBERT.

A critical study of the concept of Value, with reference to determination of the problems of the origin of Values, and the standards whereby Values are maintained. Particular attention will be given to the theories of Value and of the Austrian school of psychologists—Meinong and his pupils. Lectures, discussions, and a thesis.

V. *Courses in Psychology.*

8*b*. Introductory Physiological and Experimental Psychology. Feelings, emotions, and the higher intellectual processes. Lectures and quizzes. *Three, four, or five hours.* Professors PILLSBURY and SHEPARD, and Dr. ADAMS.

Continuation of Course 8*a*. This course may, by special permission, be elected as an introductory course without being preceded by Course 8*a*. It may be elected as 8*b, three hours;* as 8*d, four hours,* with two lectures and four hours of laboratory work, or as 8*f, five hours,* with three lectures and four hours of laboratory work.

24*c*. Psychology of Advertising. A survey of the psychological principles involved in advertising with experimental study of the relative value of different types of advertisements. *Two hours.* The course may be elected as 24*e, three hours,* including one laboratory period at hours to be arranged.

24*f*. Same as 24*d*, first semester, which see.

*25. Comparative Psychology. *Three hours.* Professor SHEPARD.

A study of the evolution of mental processes, and their comparative development in different forms. The lectures will be accompanied by laboratory work on the learning processes in animals.

25*c*. As in the first semester, (which see). Dr. FROEBERG.

*26*b*. History of Modern Psychology. Professor PILLSBURY. Continuation of Course 26*a*.

[*26*c*. General Course in Experimental Phonetics. Lectures and Laboratory work. This course, which is designed for students of language, psychology, oratory, and singing, will deal with the anatomy and physiology of the human voice, the production of speech sounds, description and classification of speech sounds, mechanical methods of recording speech sounds, study of speech records. As the number of students admitted to this course will be small, those desiring to elect it are advised to apply early to one of the instructors in charge. *One hour.* Professors MEADER and SHEPARD. Omitted in 1916-1917.]

This course should be elected as General Linguistics 26*c*.

28. Psychology of the Abnormal and Occult. *Two hours.* Professor PILLSBURY.

A critical survey of the more important facts of mental derangement that throw light upon the principles of general psychology. The more interesting forms of modern occultism will be considered in their bearings upon psycho-pathology.

*30*b*. Advanced Experimental Psychology. As in Course 30, in first semester. Professors PILLSBURY and SHEPARD, and Dr. ADAMS.

31. Psychological Journal Club as in first semester (which see).

VI. Graduate Seminaries.

Graduate Seminaries. As in first semester (which see), with the following changes:

(1). Ancient Philosophy:—
  d. The Hellenistic Period; the Pagan Reaction and Philosophy in the Roman Empire. The beginnings of Christian reflection. Professor WENLEY.

(2). Modern Philosophy.
  b. The Hegelian System and its Influence. Professor WENLEY.
  c. Britism Empiricism, Second Period; the Theory of Evolution. Assistant Professor SELLARS.
  e. Contemporary French Philosophy. Assistant Professor VIBBERT.

(8). Philosophy of Religion; Second, or Systematic, Period, from Hegel. Consequences of the Historical and Comparative Methods. Influence of the Natural Sciences. Professor WENLEY.

EDUCATION

General Statement.—Course 7 in Philosophy is prerequisite to work in Education. It should be taken in the sophomore year. This course does not count towards the Teachers' Diploma.

The aims of the courses in Education are:

1. To offer to prospective high school teachers, normal school teachers, principals, and superintendents the necessary technical training for their profession.

2. To present educational history and problems in their more philosophic and scientific aspects so as to be of value to all university students, whether they intend to become teachers or not.

3. To offer to mature students and to teachers of experience, who may wish to elect work in Education as a major or minor subject, direction and facilities leading to higher degrees.

The courses are arranged with reference to three fairly distinct phases of education, the historical, the theoretical or scientific, and the administrative.

Requirements for Admission.—Two years of academic preparation are prerequisite to work in Education. This requirement may be waived in special cases.

Introductory Courses.—Courses 1, 5, and 46 are introductory courses and may be taken in the junior year. All other courses are open only to seniors and to prospective superintendents and principals, except by special permission of the head of the department.

Superintendents and Principals.—Students looking forward to superintendencies and principalships should pursue in addition to the work required for a Teacher's Diploma courses in advanced administration, psychology of special subjects, school hygiene, and at least one seminary.

Observation.—Arrangements have been made between the University and the Public Schools of Ann Arbor, whereby students in Education are given opportunity to study methods of teaching the various subjects of the curricula in the high school. Students seeking a Teacher's Diploma are classified into groups and required to observe expert teaching of their major or minor subjects. Observation is accompanied by written reports, conferences, and collateral reading.

Teacher's Diploma.—Candidates for the Teacher's Diploma are required to complete eleven hours of credit in this department, including Courses 46 or 47, 4*a, b, c, d, e, f,* or *g*, 5, and 13 (or 32). Superintendents and principals of experience may substitute, by permission, Course 16*a* or 16*b* for Course 13 or 32.

Inasmuch as the requirements for teachers' licenses in some states differ from those in Michigan, students should take into account the legal requirements of the state in which they expect to teach.

Any student desiring a Teacher's Diploma should complete Courses 46 or 47, 5, and 13, or their equivalents before pursuing advanced work in Education. Advanced credit for other universities, or from colleges or normal schools, will be granted toward such Diploma as consideration of individual cases may warrant. No credit will be given for experience in teaching.

Graduate Courses.—Courses leading to the Master's or Doctor's Degrees are offered for advanced students in Education. These courses must be preceded by Courses 2, 4, 5, and 13, or their equivalent. Saturday classes will be arranged for teachers, principals, and superintendents now in service if there is sufficient demand for such work.

Consultation Hours.—The instructors in this department will have consultation hours as follows:

Professor WHITNEY, 10-12 daily during registration week, September 27 to October 4; thereafter daily at 1:30. Room 102, T. H.
Professor DAVIS, daily at 9:30. Room 102, T. H.
Professor BERRY, *Tu, Th*, at 10. Room 105, T. H.
Assistant Professor BREED, *M, F*, at 10. Room 105, T. H.
Assistant Professor JACKSON, *M, F*, at 3. Room 106, T. H.

FIRST SEMESTER

I. Historical Courses.

1. History of Education—Ancient and Mediaeval Periods. *Two hours.* Two sections. Assistant Professor JACKSON.

Lectures, assigned readings, discussions.

This course will trace the development of educational theory and practice in its relation to the political, social, intellectual, and religious conditions of the periods and peoples treated. It will seek on this background to develop the meaning in the social process of the aim, subject matter, method, and organization of education, and thus provide a sound general basis for criticism of present educational conditions.

Special Note.—Selections in the History of Education will be limited to a maximum of 25. Students must consult the instructor before filing elections. The time when such consultations may be had will be indicated on the bulletin board in Tappan Hall.

[31. History of Education in Michigan. *One hour.* Professor DAVIS.

Lectures, readings, reports, and discussions.

The aim of this course is to give the teachers of Michigan an appreciation of the social significance of our present educational institutions and a perspective for viewing the present educational system of the state. The course should also prove interesting to those who pursue it merely as an aspect of general history and of general culture. The first portion of the course deals with the general phases of the history of education as typical of the nation. The limits will then be contracted to include the educational movement in the Old Northwest, and finally a more detailed study will be made of the history of education in Michigan. Omitted in 1916-1917.]

46. History of Secondary Education. Lectures, assigned readings, papers, discussions. *Two hours.* Three sections. Assistant Professor JACKSON.

This course will trace the development of secondary education with reference to its aim, subject matter, methods, organization, and social function from the Renaissance to the present. The study of the relations of these constants to the changing social organization aims to give a basis for understanding the present status of secondary education and for constructive criticism of present practice. Particular attention will be given to the various phases of the development of secondary education in the United States.

Special Note.—Sections in the History of Education will be limited to a maximum of 25. Students must consult the instructor before filing elections. The time when such consultations may be had will be indicated on the bulletin board in Tappan Hall.

38*a*. Seminary in the history of Education. *Credit to be arranged.* Assistant Professor JACKSON.

This seminary is intended for such students as are competent to pursue research in topics chosen from the general field of the History of Education. Each student will select a topic and work under the direction of the instructor.

II. Theoretical Courses.

5. Psychology of Education. Lectures, reports, readings, discussions, experiments. *Two hours.* Four sections. Professor BERRY and Assistant Professor BREED.

Modern theories of the structure and functions of mind in their practical bearing upon methods of educational procedure. Results of experimental research in pure and applied psychology in so far as they relate to the learning process. Topics receiving special consideration are: the original nature of the child; the nature and principles of habit-formation; the general value of training; the psycho-educational aspects of perception, memory, association, etc., as revealed in reliable tests or accepted theory; and the nature, extent, and educational importance of individual differences.

6. Principles of Education. *Two hours.* Assistant Professor BREED.

Lectures, reports, and discussions.

This course aims to sketch a general background for educational thought and practice. The educative process is examined from the biological, psychological, philosophical, and religious points of view. Educational ideals and values are studied critically and constructively, a theory of the curriculum is outlined, and the important values of the various studies are briefly touched upon.

33. The Psychology and Education of Exceptional Children. *Two hours.* Professor BERRY.

The extent and significance of individual differences; classification of exceptional children, with a discussion of their psychological differences; study of Binet's measuring scale and other tests of intelligence; methods and subject-matter used in the education of subnormal and supernormal children.

34*a*. Seminary in Educational Psychology. *Two hours.* Assistant Professor BREED.

A study of problems, methods, and results in the field of experimental education. Problems and topics for investigation and report will be selected with considerable attention to the interests of those electing the course. It will be the aim of the seminary to acquaint the student with the experimental movement in education and give him some knowledge of the important contributions of this movement.

For graduates and others qualified.

42. Methods of Mental and Educational Measurement. *Two hours.* Professor BERRY.

This course aims to give the student a knowledge of statistical method in its relation to experimental education. Among other subjects it involves a study of psychological units and scales, central tendencies, measures of dispersion, and different methods of computing correlation.

45*a*. Experimental Education. *Two or more hours.* Assistant Professor BREED.

Preliminary laboratory work followed by the experimental study of some problem which the student may select. Students desiring to take the course will consult the instructors before enrolling.

For graduates and others qualified.

III. Administrative Courses.

13. Secondary Education. Introductory Course. Assigned readings, reports, and discussions. *Two hours.* Five sections. Professors WHITNEY and DAVIS.

This course aims to meet the needs of inexperienced, undergraduate students who desire to make a systematic study of secondary school problems. Among the topics treated are: The proper place and function of the high school; organization and administration; discipline; program of study; methods of instruction; examinations and promotions; relation of high school to other social institutions; and relation of high school to college and to practical life.

16*a*. School Administration. Lectures, readings, reports. *Two hours.* Professor WHITNEY.

This course is designed for those experienced teachers who are looking forward to positions as principals. supervisors, or superintendents; others may be admitted by permission. It aims to discuss organization and management of city school systems; the training of teachers in service; individual differences in their relation to retardation, elimination, and promotion of pupils; standards of efficiency; school surveys, and such other problems as pertain to scientific school procedure.

18. The High School Program of Studies (Curriculum). *Two hours.* Professor DAVIS.

This course traces briefly the historical development of the program of studies (curriculum) in secondary schools; seeks to discover the principles of program construction; considers the criticisms directed against the existing high school programs of studies; attempts to evaluate each of the subjects found today in the high school, to judge of its scope, time allotment, and position in the course and to suggest modes of its correlation and general methods of its presentation; makes a study of typical programs; and endeavors to formulate a satisfactory program for the high schools of today.

Open only to seniors of teaching experience and to graduate students.

48*a*. Seminary in the Administration of Secondary Schools. *Credit to be arranged.* Professor DAVIS.

This Seminary is intended for graduate students desiring to pursue research study in the field of high school administration. The more significant problems of the administration of secondary schools will be investigated analytically and constructively by the class as a unit, and in addition each student will be expected to select a topic for special investigation and carry forth his research work under the direction of the instructor.

SECOND SEMESTER

I. Historical Courses.

1. History of Education. Ancient and Mediaeval Periods. Lectures, assigned readings, and discussions. *Two hours.* Assistant Professor JACKSON.

This course will trace the development of educational theory and practice in its relation to the political, social, intellectual, and religious conditions of the periods and peoples treated. It will seek on this background to develop the meaning in the social process of the aim, subject matter, method, and organization of education and thus provide a sound general basis for criticism of present educational conditions.

Special Note.—Sections in the History of Education will be limited to a maximum of 25. Students must consult the instructor before filing elections. The time when such consultations may be had will be indicated on the bulletin board in Tappan Hall.

46. History of Secondary Education. Lectures, assgined readings, papers, discussions. *Two hours.* Two sections. Assistant Professor JACKSON.

This course will trace the development of secondary education with reference to its aim, subject matter, methods, organization, and social function from the Renaissance to the present. The study of the relations of these constants to the changing social organization aims to give a basis for understanding the present status of secondary education and for constructive criticism of present practice. Particular attention will be given to the various phases of the development of secondary education in the United States.

Special Note.—Sections in the History of Education will be limited to a maximum of 25. Students must consult the instructor before filing elections. The time when such consultation may be had will be indicated on the bulletin board in Tappan Hall.

47. History of Elementary Education. Lectures, assigned readings, papers, discussions. *Two hours.* Assistant Professor JACKSON.

This course will trace the development of the various aspects of elementary education from the time of Rousseau. The course will begin with a survey of elementary education as it existed previous to the 18th century and will then take up in detail such topics as the development of theory and method, the program of studies, the development of supervision and administration as related to the elementary school, the extension of the privilege of education, the growth of the common school system, and the like.

38*b*. Seminary in the History of Education. *Credit to be arranged.* Assistant Professor JACKSON.

This seminary is intended for such students as are competent to pursue research in topics chosen from the general field of the History of Education. Each student will select a topic and work under the direction of the instructor.

II. Theoretical Courses.

5. Psychology of Education. Lectures, reports, readings, discussions, experiments. *Two hours.* Three sections. Professor BERRY and Assistant Professor BREED.

Modern theories of the structure and functions of mind in their practical bearing upon methods of educational procedure. Results of experimental research in pure and applied psychology in so far as they relate to the learning process. Topics receiving special consideration are: the original nature of the child; the nature and principles of habit-formation; the general value of training; the pyscho-educational aspects of perception, memory, association, etc., as revealed in reliable tests or accepted theory; and the nature, extent, and educational importance of individual differences.

11. Educational Theories of the Greeks. *Two hours.* Professor BERRY.

Actual systems of education at Sparta and Athens; educational importance of the Sophists; Plato's Apology, Crito, and Protagoras; and a more detailed study of the text of Plato's Republic and of selections from Aristotle's Ethics and Politics in translation.

[12. Moral Education. Lectures, prescribed readings, and reports. Professor BERRY.

An analysis of the moral nature of the child with a view to a critical study of existing and proposed means and methods of moral education. Omitted in 1916-1917.]

20. School Hygiene. Lectures, readings and reports. *Two hours.* Professor BERRY.

The work of this course considers the physical welfare of the child in its relation to his moral and intellectual development. It involves the study of school legislation relative to school hygiene, heating, lighting, and ventilating of school rooms, physical exercise, medical inspection, nature of communicable diseases, detection and treatment of the defects of the senses, laws of fatigue, hygienic programs, etc.

[29. Advanced Educational Psychology. Lectures, required readings, and reports. *Two hours.* Professor BERRY.

This course is especially designed for advanced students. Course 5 or its equivalent is a prerequisite. The plan of the introductory course will be followed with more intensive treatment of the nature of the various mental functions and the practical relations involved. Omitted in 1916-1917.]

34*b.* Seminary in Educational Psychology. *Two hours.* Assistant Professor BREED.

The Measurement of Educational Products. Special attention will be given to the theory and use of scales for the measurement of results in writing, drawing, spelling, composition, reading, and arithmetic. Opportunity for practice in the application of the scales will be provided. This course is intended tended to be of value to county commissioners, superintendents, grammer school principles, critic teachers, and advanced students of education.

45*b.* Experimental Education. *Two or more hours.* Professor BEBBY and Assistant Professor BREED.

Preliminary laboratory work followed by the experimental study of some problem which the student may select. Students desiring to take the course will consult the instructors before enrolling.

For graduates and others qualified.

III. Administrative Courses.

4*a.* Observation and Special Methods in Greek and Latin. Lectures, readings, conferences, and critiques. *One hour.* Professor CRITTENDEN.

Practical application of the principles of class management; aims and values of the classics; the courses of study; outlines of the work as regards quantity, quality, and method; special consideration of the stress to be laid upon such features as pronunciation, vocabulary, syntax, translation, etc.; examination of some of the text-books now in use.

Twenty hours of high school observation are required of each student.

4*b.* Observation and Special Methods in German. Lectures, conferences, reports, readings, and discussions. *One hour.* Assistant Professor EGGERT.

The aim of this course is to consider principles of the recitation unit, to give opportunity for the observation of these principles as applied in practice, and to consider the principles underlying the teaching of modern language. Such problems as text-books, pronunciation, proper use of translation will be given careful attention.

Twenty hours of high school observation are required of each student.

4*c.* Observation and Special Methods in English. Lectures, conferences, reports, and collateral readings. *One hour.* Professor RANKIN.

The aim of this course is to consider the fundamental principles of a class recitation and to offer to students in Education opportunity to observe the practical demonstration of these principles in teaching composition and literature. Careful consideration is given to formal grammar, the aims, values, and methods of teaching composition and literature, the course of study, and such other factors as pertain to the instruction of English in the high schools. Students are required to observe twenty recitations during a semester.

4d. Observation and Special Methods in History . Lectures, conferences, reports, readings, and discussions. *One hour.* Professor DAVIS.

The aim of this course is to give inexperienced but prospective teachers of history an opportunity to study the special problems of the classroom and to consider the special aspects of methods involved in history teaching in secondary schools. The work will consist of lectures and exercises dealing with such topics as the aims of history teaching; the relation of history to literature, biography, and science; the sequence of the various divisions of the subject; the proportionate emphasis to be accorded different phases of history; the organization of material; the use of text-books and notebooks; the use of outlines, maps, charts, blackboards, reference books, source material, pictures, lantern slides, and other illustrative helps; tests and examinations; reports and reviews; lesson planning; types of recitation; the art of questioning; assignment of lessons, and other topics involving the technique of the recitation.

Each student will be required to spend twenty hours during the semester observing the classroom work in the Ann Arbor High School.

4e. Observation and Special Methods in Mathematics. Lectures, readings, and conferences. *One hour.* Professor MARKLEY.

The application of the principles of class management to concrete situations; the aims and values of mathematical study; the course in mathematics for the secondary school; classification and critical consideration of special methods and modes; comparison of text-books. Twenty hours of high school observation during the semester.

4f. Observation and Special Methods in Botany. Lectures, conferences, reports, and discussions of observations. *One hour.* Professor POLLOCK.

Twenty hours of observation during the semester of Botany teaching in the Ann Arbor High School. One hour per week for conference.

In the conference hour there will be considered: First, the laboratory and its equipment; then the educational value of the natural sciences, how this value is to be obtained, and its relation to the method of teaching the subject. Lastly, a course of study will be discussed in detail for botany with reasons for the choice of material. A detailed outline for a number of field trips will be worked out. The phases of botany, especially valuable as a basis for agriculture, will be indicated.

4*g*. Observation and Special Methods in Zoology. *One hour.* Assistant Professor LA RUE.

Lectures and conferences on such topics as the following: The aim and value of the zoological course in secondary schools, the content of the course, literature, the planning of the laboratory, choice of apparatus, purchase of supplies, etc.

Twenty hours of observation work with reports on the teaching of Zoology in the Ann Arbor High School will be required.

For practical training in laboratory methods prospective teachers of Zoology should elect Courses 18 and 18*a* in Zoology in the same year with this course or prior to it.

4*h*. Observation and Special Methods in Physics. *One hour.* Assistant Professor RICH.

This course is open only to seniors who are completing the requirements for recommendation as teachers in Physics. See page 257.

Lectures, conferences, readings, reports, discussions, on such subjects as the relative emphasis to be placed on the various parts of a high school course in Physics; the choice and the planning of laboratory experiments and the correlation of laboratory work with text-book work; the comparison of various laboratory methods, notebooks, and manuals; the selection and care of apparatus for lecture table and laboratory; the advantages and the disadvantages of separate courses for boys and girls; the use of supplementary material, "household" physics, "practical" physics, etc.

Twenty hours of high school observation during the semester.

14. Social Education. Lectures, readings, theses, reports. *Two hours.* Professor WHITNEY.

A study of the school as a social factor in its relation to the home, the community, the state, and the church. Among the topics treated are: The social basis of education; the social extension of the school; continuation schools; school and the business world; parental schools; the juvenile court; self-governing clubs; the boy problem; education and crime; industrial education; agricultural education; athletics; course of study; six-year high school; social study period and recitation, and high school fraternities.

16*b*. School Administration. Readings and reports. *Two hours.* Professor WHITNEY.

This course is a continuation of 16*a*; it is open to others of teaching experience by permission. This course aims to consider the scientific methods of teaching, testing, and supervising the elementary school subjects—readings, handwriting, spelling, language, arithmetic, geography, and history.

17. Comparative School Systems. Lectures, prescribed readings, and reports. *Two hours.* Professor DAVIS.

This course is designed to present the essential features of the school systems of the United States, England, Germany, and France; to compare these systems with each other, and to judge of the efficiency of each in the light of their respective educational aims and national ideals. Among the topics treated are organization, supervision, curriculum, methods of teaching, continuation schools, technical schools, universities, etc.

32. Secondary Education. Advanced course. *Two hours.* Professor DAVIS.

This course aims to meet the needs of superintendents, principals, and experienced teachers who desire to make a detailed study of the general problems of organization, administration, and management of high schools, and such special contemporary problems as are at present forcing themselves for solution. Among the topics considered are the principles of scientific educational investigations; the aim of the secondary school; the problems growing out of the age of the pupils; problems relating to the curricula, their scope, intensiveness, and flexibility; the high school as a social institution; the relation of the high school to the elementary school, to college, and to the world of industrial and commercial affairs; vocational education and vocational guidance; and student collateral activities.

[43. Organization and Management of Public Education. Lectures, reports, and discussions. *Two hours.* Professor WHITNEY.

This course is aimed to familiarize prospective business men, professional men, members of boards of education, and legislators with the general problems involved in the administration of public education. It is not designed for teachers, nor will credit be given toward the teacher's diploma except by special permission. Among the topics discussed are colonial education, the national government and education, the state and education, organization and administration of city schools, organization and administration of rural schools, school taxation, primary school fund, agricultural education, industrial education, continuation schools, school surveys. Brief comparison will be made with essentials of English, German, and French education. Omitted in 1916-1917.]

48*b*. Seminary in the Administration of Secondary Schools. *Credit to be arranged.* Professor DAVIS.

Course 48*b* is a continuation of Course 48*a*. Students who have not pursued Course 48*a* may, however, by the consent of the instructor, be admitted to this course.

49. Seminary in Social Education. *Credit to be arranged.* Professor WHITNEY.

In content this course is similar to Course 14; in practice it is wholly different. Each student will be expected to select a problem in the field of social education and to carry forth an original investigation of it under the direction of the instructor.

MATHEMATICS

A representative of the department of Mathematics will be in Room 108, N. W., from 10 to 12, September 27 to October 4 inclusive, to advise students with reference to matters connected with mathematical work.

Courses 1, 2, 3, 4 (or equivalent courses), taken in order, furnish the preparation preliminary to further study in any field of pure or applied mathematics. Course 1E, 2E, 3E, and 4E are equivalent to the courses prescribed for students in the College of Engineering (see announcement of that College).

Courses 1, 1E, 2, 2E, *2a*, 3, 3E, *3a*, *3b*, 4, 4E, *4a*, *4b*, 47, 48, 51, and 52, are intended primarily for undergraduates; Courses 5, 6, 7, 8, 9, 11, 12, 13, 14, 19, 20, 25, 26, 27, 28, 33, 34, 49, 50, 53, 54, 55, 56, 57, 58, 61, and 62, are for undergraduates and graduates; other courses are primarily for graduates, though undergraduates of exceptional ability are admitted by special permission.

Students preparing to teach mathematics in high schools should take Courses 1, 2 (or 1E, 2E), 3, 4, 19, 20, and five or more hours of additional work, to be selected after conference with the head of the department. Such conference should be had not later than the beginning of the second year.

Students intending to specialize in Actuarial or Statistical Mathematics are advised to consult the instructor in charge early in their course and to examine carefully the program of studies under the course in Insurance and Statistics in the special bulletin of courses in Business Administration. The courses in Mathematics for students in actuarial or statistical lines of study should be taken in the following order: 1, 2, 3 (or 3E), and 51, 4 (or 4E), and 52, 13, 49, and 53, 14, 50 and 54, 44 and 56.

FIRST SEMESTER

A. Geometry and Plane Trigonometry. *Four hours.* Three sections. Dr. MILLER, Dr. WELLS, and Mr. BALDWIN.

All students (including upper classmen) electing this course should consult with the Classification Committee, Auditorium, U. H.

No credit for graduation is counted for this course until course B has been satisfactorily completed. These courses are intended for those only who present *one* unit of geometry and *one* unit of algebra.

1. Plane Trigonometry and Algebra. *Four hours.* Fifteen sections. Professors **Markley**, **Ford**, and **Karpinski**; Assistant Professor **Bradshaw**, Mr. **Coe**, Dr. **Miller**, Dr. **Wells**, Mr. **Baldwin**, and Mr. **Carver**.

All students (including upperclassmen) electing this course should consult with the Classification Committee, Auditorium, U. H.

Students who offer Plane Trigonometry either for admission or advanced credit should elect Course 1E, as follows:

1E. Algebra and Analytic Geometry. *Four hours.* Five sections, Professor **Ford**, Assistant Professor **Bradshaw**, Mr. **Coe**, Dr. **Miller**, and Mr. **Baldwin**.

All students (including upperclassmen) electing this course should consult with the Classification Committee, Auditorium, U. H.

2. Plane Analytic Geometry. *Four hours.* Two sections. Mr. **Coe**, and Dr. **Wells**.

All students (including upperclassmen) electing this course should consult with the Classification Committee, Auditorium, U. H.

3. Calculus (I). *Four hours.* Professor **Beman**.

Course 3 and 4 give considerable attention to the historical and pedagogical aspects of the subject, and are required for Courses 19 and 20.

3E. Calculus (I). *Five hours.* Professor **Markley**.

3*a*. Calculus, Shorter Course (I). *Three hours.* Assistant Professor **Bradshaw**.

Courses 3*a* and 4*a* are intended for those who, while not wishing to specialize in Mathematics, desire as a part of a liberal education an acquaintance with the leading ideas of the Infinitesimal Calculus and its important applications.

4*b*. Calculus (II). *Four hours.* Professor **Karpinski**.

5. Solid Analytic Geometry. *Two hours.* Professor **Beman**.

7. Descriptive Geometry. *Three hours.* Assistant Professor **Bradshaw**.

Orthogonal projection on two planes, central projection and plane perspective, and axonometry will be treated with primary emphasis on mathematical theory rather than on technical drawing.

9. Differential Equations. *Three hours.* Professor **Beman**.

11. Theory of Functions of a Complex Variable. *Three hours.* Professor MARKLEY.
The fundamental ideas of complex numbers, their geometric interpretation and their Calculus, with introduction to the theories of functions as developed by Cauchy, Riemann, and Weierstrass.

13. Higher Algebra (I). *Three hours.* Professor MARKLEY.
This course is intended to supplement the work usually done in a short first course in college algebra. It consists of a consideration of those algebraic topics and processes commonly used in all branches of mathematics, both pure and applied. It should be taken by those whose interests require constant use of mathematics, either in scientific work or in teaching. Course 3 should precede or accompany this course.

15. Theory of Functions of a Real Variable. *Three hours.* Professor MARKLEY.
Critical review and summary of the definitions and essential theorems in the theory of limits, including those of derivative and integral. The convergence and summability of Fourier series and integrals. Introduction to "Mengenlehre."

17. Theory of the Potential. *Three hours.* Professor ZIWET.

19. Teachers' Seminary. Algebra. *Two hours.* Professor BEMAN.
Courses 19 and 20 are open to those who have completed Courses 1, 2 (or 1E, 2E), 3 and 4.

23. Projective Geometry (II). *Three hours.* Assistant Professor BRADSHAW.
Analytic projective geometry, including homogeneous coordinates in two and three dimensions, conics and quadric surfaces, an introduction to the theory of invariants, and line geometry.

25. Differential Geometry (I). *Two hours.* Dr. MILLER.

[27. Theory of Numbers (I). *Two hours.* Professor KARPINSKI. Omitted in 1916-1917.]

29. Harmonic Analysis (I). *Two hours.* Professor FORD.

[31. Theory of Functions, including the Theory of Elliptic Functions. Advanced Course (I). *Two hours.* Professor MARKLEY. Omitted in 1916-1917.]

33. Advanced Mechanics (I). *Three hours.* Professor FIELD.

[35. Elementary Theory of Differential Equations. *Three hours.* Dr. MILLER. Omitteed in 1916-1917.]

37. Mathematical Theory of Elasticity. *Two hours.* Professor ZIWET.

41. Infinite Series and Products (I). *Two hours.* Professor FORD.

43. The Theory of Integral Equations (I). *Two hours.* Assistant Professor HILDEBRANDT.

47. History of Mathematics (I). Lectures, discussions, and required readings. *Two hours.* Professor KARPINSKI.

This course is especially planned to give prospective teachers of secondary mathematics a survey of the historical development of the elementary branches—arithmetic, algebra, geometry, trigonometry, and the beginnings of analytic geometry and the calculus—from early times to the present. Some attention will also be paid to an historical treatment of the methods of teaching the science. A reading knowledge of French or German is highly desirable.

49. Mathematical Theory of Statistics (I). *Two hours.* Mr. CARVER.

The subjects treated in this course are averages, graphical representation of statistics, frequency curves, correlation, smoothing of statistics; with applications to statistical problems in economics, biology, insurance, and physics.

A knowledge of calculus is necessary.

51. Introduction to the Mathematical Theory of Interest, Insurance, and Statistics (I). *Three hours.* Professor GLOVER, Professor KARPINSKI, and Mr. CARVER.

The aim of this course is to explain and illustrate the application of mathematics to financial transactions, life insurance, and statistics, to such an extent as may be of interest and value to the general student.

It must be preceded by Courses 1 (or 1E) and 2 (or 2E).

53. Finite Differences. *Three hours.* Professor GLOVER.

Course 53 is open to those who have completed Courses 3 (or 3E, or 3*a*), 4 (or 4E, or 4*a*), and 52.

55. Advanced Mathematical Theory of Interest and Life Contingencies (I). *Four hours.* Professor GLOVER.

57. Empirical Formulas and Graphical Methods (I). *Two hours.* Professor RUNNING.

61. Linear Differential and Difference Equations (I). *Three hours.* Assistant Professor FORT.

67. Casualty Actuarial Mathematics (I). *Two hours.* Mr. CARVER.
Additional courses in Mathematics will be found in the Announcement of the Graduate School.

SECOND SEMESTER

B. Algebra. *Four hours.* Two sections. Dr. MILLER and Dr. WELLS.

1. Plane Trigonometry and Algebra. *Four hours.* Three sections. Mr. COE, Dr. WELLS, and Mr. BALDWIN.

2. Plane Analytic Geometry. *Four hours.* Fifteen sections. Professors MARKLEY, FORD, and KARPINSKI; Assistant Professor BRADSHAW, Mr. COE, Dr. MILLER, Mr. BALDWIN, and Mr. CARVER.

2E. Analytic Geometry. *Four hours.* Five sections. Professor FORD, Assistant Professor BRADSHAW, Mr. COE, Dr. MILLER, and Mr. BALDWIN.

3*b*. Calculus (I). *Four hours.* Professor KARPINSKI.

4. Calculus (II). *Four hours.* Professor BEMAN.

4E. Calculus (II). *Five hours.* Professor MARKLEY.

4*a*. Calculus, Shorter Course (II). *Three hours.* Assistant Professor BRADSHAW.

6. Introduction to Modern Geometry. *Three hours.* Assistant Professor BRADSHAW.
A general survey of some of the methods of modern geometry will be given as an introduction to synthetic and analytic projective geometry. Some of the topics treated will be double ratio, the involution, line coordinates, abridged notation, parameter equations, systems of conics, geometry of the triangle and circle, imaginary elements.

8. Projective Geometry (I). *Three hours.* Assistant Professor BRADSHAW.
Synthetic projective geometry based largely on the works of Enriques and Reye.

12. Theory of Functions of a Complex Variable. *Three hours.* Professor MARKLEY.

14. Higher Algebra (II). *Three hours.* Professor MARKLEY.
This course is a continuation of Course 13, and consists of a more formal introduction to the subjects usually studied in a course in the theory of equations and higher algebra.

16. Theory of Functions of a Real Variable. *Three hours.* Professor FORD.

[18. Higher Plane Curves. *Two hours.* Professor BEMAN. Omitted in 1916-1917.]

20. Teachers' Seminary. Geometry. *Two hours.* Professor BEMAN.

22. Advanced Differential and Integral Calculus (II). *Three hours.* Professor BEMAN.

24. Advanced Projective Geometry. *Three hours.* Assistant Professor BRADSHAW.
A continuation of Courses 8 and 23.

26. Differential Geometry (II). *Two hours.* Dr. MILLER.

[28. Theory of Numbers (II). *Two hours.* Professor KARPINSKI. Omitted in 1916-1917.]

30. Harmonic Analysis (II). *Two hours.* Professor FORD.

[32. Theory of Functions. Advanced Course (II). *Two hours.* Professor MARKLEY. Omitted in 1916-1917.]

34. Advanced Mechanics (II). *Three hours.* Professor FIELD.

36. Vector Analysis. *Three hours.* Professor ZIWET.

38. Mathematical Theory of Elasticity. *Two hours.* Professor ZIWET.

42. Infinite Series and Products (II). *Two hours.* Professor FORD.

44. The Theory of Integral Equations (II). *Two hours.* Assistant Professor HILDEBRANDT.

46. Advanced Theory of Vector Analysis. *Two hours.* Professor ZIWET.

48. History of Mathematics (II). *Two hours.* Professor KARPINSKI.

50. Mathematical Theory of Statistics (II). *Two hours.* Mr. CARVER.

52. Introduction to the Mathematical Theory of Interest, Insurance, and Statistics (II). *Three hours.* Professor GLOVER, Professor KARPINSKI, and Mr. CARVER.

54. Theory of Probability. *Three hours.* Professor GLOVER.

56. Advanced Mathematical Theory of Interest and Life Contingencies (II). *Four hours.* Professor GLOVER.

58. Empirical Formulas and Graphical Methods (II). *Two hours.* Professor RUNNING.

62. Linear Differential and Difference Equations (II). *Three hours.* Assistant Professor FORT.

68. Casualty Acturial Mathematics (II). *Two hours.* Mr. CARVER.
Additional courses in Mathematics will be found in the Announcement of the Graduate School.

ASTRONOMY

Courses 1, 2, *2a,* and 8 are intended to furnish a general knowledge of descriptive astronomy without entering far into its mathematical details. Courses 3, 5, 9, and 18 are beginning courses in the departments of spherical and practical astronomy, mathematical astronomy, astrophysics, and solar physics, respectively.

Consultation Hours.—Throughout registration week, September 27 to October 4, Professor HUSSEY, or a representative, will be in Room 109, T. H., 10-12 daily, to advise those desiring to elect courses in Astronomy.

FIRST SEMESTER

1. Descriptive Astronomy. The Solar System. *Three hours.* Three sections. Professors HUSSEY and CURTISS, and Dr. KIESS.
A descriptive course, including the fundamental principles of Astronomy, and a presentation of the leading facts respecting the sun, moon, planets, and comets. Occasional lantern illustrations, with visits to the Observatory.

3 or *3e.* Practical Astronomy. Two hours. Dr. KIESS.
The elements of Spherical Astronomy with practical applications. Theory of the sextant and transit and their use in the determination of time, latitude, longitude, and azimuth. The observational work at the Observatory in connection with this course will be varied to suit the needs of students from different departments.

[4. Advanced Practical Astronomy. *Two hours.* Professor HUSSEY.
Studies in Spherical Astronomy. Theory of the equatorial and its use in observational work. Reduction of measurements. Open to those who have had Course 3 or its equivalent. Omitted first semester of 1916-1917.]

5. Theoretical Astronomy. *Three hours.* Professor HUSSEY.
The elements of Celestial Mechanics, and theory and practice in the determination of parabolic and elliptic orbits. This course presupposes a knowledge of integral calculus.

8. History of Astronomy. *Two hours.* Dr. KIESS.
The History of Astronomy since the invention of the telescope. but treating especially of the development of the science during the past century. This is intended as a continuation of Courses 1 and 2.

11. Variable Stars. *Two hours.* Professor CURTISS.
Lectures at the University and observational studies of selected stars at the Observatory. A knowledge of Descriptive Astronomy is required.

12. Spectroscopic Binaries. *Two hours.* Professor CURTISS.

Theory and practice in the determination of orbits from spectroscopic measurements of motion in the line of sight, and from photometric observations of variation in brightness. Calculus is required.

14. Advanced Mathematical Astronomy. Studies in continuation of Course 7 will be arranged for those qualified to take them. *Three hours.* At the Observatory.

18. Solar Physics. *Two hours.* Dr. KIESS.

A study of the methods and instruments used in modern solar research. Discussion of results of recent investigations. Lectures and collateral reading. Observatory practice. Calculus and General Physics are required.

21. Advanced Physical Astronomy. *Credit to be arranged.* Professor CURTISS and Dr. KIESS.

Studies in continuation of Courses 9 and 18 will be arranged for those qualified to take them.

SECOND SEMESTER

2. Descriptive Astronomy. Stars and Nebulae. *Three hours.* Two sections. Professor HUSSEY and Dr. KIESS.

A general descriptive course in Stellar and Nebular Astronomy. Occasional lantern illustrations. May be taken in continuation of Course 1, or independently, as desired.

2*a*. Elementary Practical Astronomy. *One hour.* Professor CURTISS.

Constellation studies and telescopic examinations of the heavenly bodies. Selected problems with the celestial globe and the equatorial telescope. Observational work at the Observatory. To be preceded by Course 1, or to be taken in connection with Course 2 or Course 3*e*.

3*e*. Practical and Goedetic Astronomy. *Two hours.* Two sections. Professor CURTISS and Dr. KIESS.

The elements of General, Spherical, and Geodetical Astronomy with practical applications. The theory of the determination of time, latitude, longitude, and azimuth.

4. Advanced Practical Astronomy. *Three hours.* Professor HUSSEY.

Open to those who have had Course 3 or its equivalent.

6. Method of Least Squares. *Two hours.* Dr. KIESS.

Theory of the error curve and of the combination of observational data according to the Method of Least Squares.

7. Advanced Theoretical Astronomy. *Three hours.* Professor HUSSEY.

   Definitive determination of orbits. Theory of Interpolation and Mechanical Quadrature. Special Perturbations. Open to those who have had Course 5.

9. Astrophysics. *Two hours.* Professor CURTISS.

   Introductory Course. General treatment of methods and results, having reference more particularly to stellar spectroscopy. Practice in the measurement and reduction of spectrographic plates will form a part of the course. A general knowledge of Physics, Astronomy, and Calculus is required.

12. Spectroscopic Binaries. *Two hours.* Professor CURTISS. Continued from the first semester.

14. Advanced Mathematical Astronomy. See announcement for first semester. Professor HUSSEY.

21. Advanced Physical Astronomy. See announcement for first semester. Professor CURTISS and Dr. KIESS.

PHYSICS

Students entering without a preparatory course in high school physics will be allowed to enter Courses 1, 2, and D only under the condition that they have previously completed Course Z.

Students expecting to teach physics in high schools should take at least the following courses: 1, 3*a,* 2, 4*a,* 5, 7, and 8.

The lectures in Courses 1, 2, 1E, and 2E, are given in the large lecture room at the west end of the Physical Laboratory.

Two hours of laboratory work will be required for *one hour credit.* The fees for laboratory courses are based upon the *number of weekly periods* of two hours each of laboratory work comprised in the course. No laboratory work can be taken in periods of less than two consecutive hours. No student will be admitted to a laboratory course unless the fee is paid.

FIRST SEMESTER

A. Courses Primarily for Undergraduates.

Z. Physics for Beginners. *Four hours.* Mr. MCGRATH.

   This course is intended for students who have not presented physics for admission and who wish to pursue studies in the department of Physics. *No credit toward graduation will be allowed for this course, unless it is followed by Course 1.*

1. General Physics: Mechanics, Sound, and Heat. Lectures and recitations. *Four hours.* Professor RANDALL, Assistant Professor COLBY, Mr. SLEATOR, Dr. LINDSAY, Dr. MEYER, and Mr. BELL.

Course 1 must be preceded or accompanied by a course in plane trigonometry.

Students who contemplate transferring their credits to the College of Engineering will be required to offer Courses 1, 1*a*, and 3*a* as an equivalent of 1E.

Students who have not satisfied the entrance requirement in physics must complete Course Z before they register for Course 1.

1*a*. Physical Problems. *One hour.*

This course should be elected in conjunction with Course 1. It is especially designed for students preparing to teach. Special attention is given to the solution of illustrative problems.

2. General Physics. Magnetism, Electricity, and Light. Lectures and recitations. *Four hours.* Assistant Professor WILLIAMS, Dr. LINDSAY, and Mr. BARNARD.

This course must be preceded by Course 1.

Students who contemplate transferring their credits to the College of Engineering will be required to offer Courses 2, 2*a*, and 4*a* as an equivalent of 2E.

2*a*. Physical Problems. Continuation of Course 1*a*. *One hour.*

3L. Elementary Measurements in Mechanics, Sound, and Heat. Dr. LINDSAY, Mr. BELL, and Dr. HARRINGTON.

The course may be elected as:

3*a*. *One hour.* Only in conjunction with Course 1. Recitation once every two weeks. 3*b*. *Two hours.* 3*c*. *Three hours.*

Course 3*b* and 3*c* may accompany or follow Course 1. Recitation once a week.

4L. Elementary Measurements in Magnetism, Electricity, and Light. It should be preceded or accompanied by one of the courses under 3L. Dr. LINDSAY, Mr. BELL, and Dr. HARRINGTON.

The course may be elected as:

4*a*. *One hour.* Only in conjunction with Course 2. Recitation once every two weeks. 4*b*. *Two hours.* 4*c*. *Three hours.*

Courses 4*b* and 4*c* may accompany or follow Course 2. Recitation once a week.

Any student who is taking or has taken Course 2 and who wishes to complete the elementary laboratory work in one semester will be allowed to elect at the same time any course under 3L, and any course under 4L.

B. For Graduates and Undergraduates.

5. Electrical Measurements. Lectures, recitations and laboratory. *Four hours.* Professor SMITH, Dr. KENT, and an assistant. Fee, $2.00.

In the class work the principles of electrical behavior are critically studied and discussed. The laboratory exercises are designed to illustrate and emphasize these principles and to give the student some personal experience in the careful use of electrical measuring instruments. The course includes the modern methods of measuring current, resistance, electromotive force, and power, and the calibration of the instruments employed.

Course 5 must be preceded by Courses 1, 2, and one course under 3L and 4L. A knowledge of calculus is also desirable.

7. Advanced Physics. *Four hours.* Assistant Professor WILLIAMS.

This course is intended primarily for students preparing themselves to teach. Courses 1 and 2 are prerequisites and a knowledge of calculus is required.

9. Direct Current Machinery. Lectures and laboratory work. *Two hours.* Assistant Professor WILLIAMS.

This course must be preceded by Course 5 or Courses 3*c* and 4*c*.

11. Laboratory Work in Heat. *Two hours.* Dr. KENT.

A lecture and experimental course covering the fundamental principles of heat and offering the student a working knowledge of the modern methods of heat determinations. The laboratory work includes measurements of specific heats of solids, liquids, and gases; heats of fusion and vaporization; vapor pressures; thermal conductivities, critical temperatures, etc. The problems are chosen with a view of illustrating present methods of calorimetry and temperature measurement.

15. Electrochemical Physics. Lectures and laboratory work. *Two hours.* Professor HENDERSON.

This course offers a study, from the view point of physics, of the fundamental principles of electrochemistry. It is designed (a) to meet the needs of those preparing to teach physics and chemistry, (b) to furnish a basis for the application of electrochemical principles to practical problems in chemistry and electricity, and (c) to prepare for research in electrochemical physics.

Course 15 must be preceded by Courses 1, 2, and at least two hours of elementary laboratory work.

C Primarily for Graduates.

21. Theoretical Mechanics. Professor FIELD.

Geometry of Motion; kinematics of a particle and of a rigid body; statics; kinetics of a particle and of a rigid body; the problem of the top; relative motion; Lagrange's equations, general principles of mechanics. *Three hours a week, throughout the year.*

23. Sound. Two recitations and four hours in the laboratory per week. *Four hours.* Mr. SLEATOR. The class work is based on Barton's *Text-book on Sound.*

25. Theory of Heat. *Two hours.* Professor RANDALL.

This is a theoretical course in which selected chapters from the subject of heat are discussed.

27. Theory of Electricity and Magnetism. *Two hours.* Assistant Professor COLBY.

This course should be preceded by a course in electrical measurements; a knowledge of calculus is also required.

29. Special Problems.

Research work on special problems under the direction of some member of the teaching staff.—*Credit to be arranged.*

31. Thermodynamics. *Two hours.* Assistant Professor COLBY.

[31*a*. Statistical Physics (I). Gas Theory. *Two hours.* Assistant Professor COLBY. Omitted in 1916-1917.]

33. Seminary. *Two hours.* Professor RANDALL.

In this course it is designed to make a thorough study of special subjects. For the year 1916-1917 the subject is the Quantum Theory.

35. Physical Colloquium. Reports upon important articles in current physical literature, with analysis, and discussion of results. Current reports upon problems in original research.

All instructors and assistants in the department take part in the Physical Colloquium. While intended primarily for graduate students, it is also open to undergraduates doing advanced work.

37. German Reading. *One hour.* Assistant Professor LEE.

The object of this course is to familiarize the student with the technical terms used in German literature of Physics. Classical lectures as well as important articles in current scientific journals will be read.

SECOND SEMESTER

A. Courses Primarily for Undergraduates.

D. General Physics. Lectures and recitations. *Four hours.*

This course, consisting of certain topics selected from the entire field of general physics, is for students of the College of Dental Surgery only.

1. General Physics: Mechanics, Sound, and Heat. Lectures and recitations. *Four hours.* Assistant Professor Williams, Dr. Lindsay, and Mr. Barnard.

Course 1 must be preceded or accompanied by a course in plane trigonometry.

Students who contemplate transferring their credits to the College of Engineering will be required to offer Courses 1, 1*a*, and 3*a* as an equivalent of 1E.

Students who have not satisfied the entrance requirement in physics must have completed Course Z, (see first semester).

1*a*. Physical Problems. *One hour.*

This course should be elected in conjunction with Course 1. It is especially designed for students preparing to teach. Special attention is given to the solution of illustrative problems.

2. General Physics. Magnetism, Electricity, and Light. Lectures and recitations. *Four hours.* Professor Randall, Assistant Professor Colby, Mr. Sleator, Dr. Lindsay, Dr. Meyer, and Mr. Bell.

This course must be preceded by Course 1.

Students who contemplate transferring their credits to the College of Engineering will be required to offer Courses 2, 2*a*, and 4*a* as an equivalent of 2E.

2*a*. Physical Problems. Continuation of Course 1*a*. *One hour.*

3L. Physical Measurements in Mechanics, Sound, and Heat. Dr. Lindsay, Mr. Bell, and Dr. Harrington.

It may be elected as:

3*a*. *One hour.* Only in conjunction with Course 1. 3*b*. *Two hours.* 3*c*. *Three hours.*

4L. Physical Measurements in Magnetism, Electricity, and Light. Dr. Lindsay, Mr. Bell, and Dr. Harrington.

It may be elected as:

4*a*. *One hour.* 4*b*. *Two hours.* 4*c*. *Three hours.*

See first semester about hours and the combination of courses under 3L and 4L.

B. For Graduates and Undergraduates.

6. Electrical Measurements. Lectures, recitations and laboratory. *Four hours.* Professor SMITH, Dr. KENT, and an assistant. Fee, $2.00.

   This is a continuation of Course 5, and includes measurements of capacity, self and mutual inductance, and the fundamental measurements with alternating currents. Especial attention is given to the theory of the magnetic circuit and the determination of the magnetisation and hysteresis curves of iron and steel.

   A working knowledge of the calculus is required.

8. Advanced Physics. Continuation of Course 7. *Four hours.* Assistant Professor WILLIAMS.

10. Alternating Currents. Lectures and laboratory work. *Two hours.* Assistant Professor WILLIAMS.

12. Laboratory Work in Light. Laboratory work and recitations. *Two hours.* Dr. MEYER.

    The course includes work with the prism and grating spectrometers, refractometer, and Pulfrich and Michelson interferometers. Experiments are performed by the student in diffraction, resolving power, and double refraction. Some elementary spectroscopic work is done.

14. Electron Theory and Radioactivity. Lectures and laboratory. *Two hours.* Professor SMITH.

    The laboratory work is largely with radioactive substances. The distinguishing characteristics of alpha rays, beta rays and gamma rays are studied, and the half-life periods of several substances are determined by each student.

16. Electrochemical Physics. *Two hours.* Professor HENDERSON.

    This course must be preceded by Course 15, or an equivalent course in Electrochemistry.

18. Measurements of High Temperatures. *Two hours.* Dr. KENT.

    An experimental course accompanied by lectures, covering the present methods of high temperature measurement. Opportunity is offered to use the gas thermometer, resistance thermometer, and various types of thermo-electric and radiation pyrometers.

20. Architectural Acoustics. *Two hours.* Assistant Professor RICH.

    Lectures, with illustrative problems on sound transmission, distribution, and absorption, and an experimental study of the acoustical properties of certain rooms.

C. Courses Primarily for Graduates.

22. Theoretical Mechanics. Continuation of Course 21. Professor **Field.**

24. Theory of Light. *Two hours.* Dr. **Meyer.**
This course comprises a study of the essential phenomena in Optics including interference, diffraction, dispersion, absorption, polarization, and double refraction.

26. Radiation I. *Two hours.* Professor **Randall.**
A lecture course treating the subject in substantially the form in which it is presented in Planck's Theory of Radiation. Given in 1916-1917 and alternate years.

[26*a*. Radiation II. *Two hours.* Professor **Randall.**
A lecture course dealing principally with series relations in spectra: the Zeeman and Stark effects; theories of atomic structure and allied topics. Continuation of Course 26. Given in 1917-1918 and alternate years.]

28. Electricity and Magnetism. Continuation of Course 27. *Two hours.* Assistant Professor **Colby.**

30. Special Problems.

32. Thermodynamics. Continuation of Course 31. *Two hours.* Assistant Professor **Colby.**

[32*a*. Statistical Physics (II). Allied Problems in Gas Theory and Electron Theory. *Two hours.* Assistant Professor **Colby.** Omitted in 1916-1917.]

34. Seminary. *Two hours.* Professor **Randall.**

36. Colloquium.

38. French Reading. *One hour.* Assistant Professor **Lee.**

CHEMISTRY

Students who expect to specialize in Chemistry are urged to follow, as far as possible, the sequence of studies in chemistry and related subjects as given in the "Curriculum in Chemistry." A special bulletin describing their curriculum may be obtained from the Registrar or from the Professor of Chemistry, Room 220, Chemistry Building.

The course numbered 1 to 12 give work upon the foundation of chemistry, in its several divisions. A sufficient number of these courses must be completed before entering upon the advanced studies of the science, or its special application to the industries and professions. It is stated for each course what other courses must precede it. Of the more advanced studies, Courses 13 to 26 are in General, Inorganic, and Physical Chemistry; Courses 27 to 40 in Analytical, Technical, and Applied Chemistry; Courses 42 to 51 in Organic Chemistry.

Consultation Hours.—Throughout registration week, September 27 to October 4, Professor SMEATON will be in Room 474, Ch., 10-12, daily, to advise those desiring to elect courses in chemistry.

FIRST SEMESTER

Foundation Courses in Chemistry:

1. General and Inorganic Chemistry. Lectures and recitations. *Two hours.* Professor BIGELOW.

Course 1 must be accompanied by Course 1*a*. Amphitheatre. Chemical Laboratory.

1*a*. General and Inorganic Chemistry. Laboratory and discussions. *Two hours.* Fee, $10. Dr. HARRIS and assistants.

Those electing Courses 1 and 1*a* are expected to elect Courses 2 and 2*a* the following semester, as they form one complete whole and should properly be considered as one course extending throughout the year. They must precede all other courses in chemistry.

2*b*. General and Inorganic Chemistry. Lectures, recitations, and laboratory. *Four hours.* Fee, $10. Professor HALE.

This course is for students who have had chemistry, but not the full equivalent of Courses 1, 1*a*, 2, and 2*a*. It may be elected only after consultation with the instructor. An examination will be held within the first four weeks and those considered inadequately prepared will be transferred to Course 1.

2E. General and Inorganic Chemistry. Lectures, recitations, and laboratory. *Five hours.* Fee, $10. Professor SMEATON and Dr. FERGUSON, and assistants.

Course 2E is required of all first year students in the College of Engineering who have presented entrance chemistry. Others may elect the course only by special permission.

A. General and Inorganic Chemistry. Lectures, recitations, and laboratory. *Six hours.* Fee, $10. Professor LICHTY.

Course A is required of all first year students in the Colleges of Dentistry, and Pharmacy. Others may elect the course only by special permission.

3. Qualitative Analysis. Lectures, recitations, and laboratory. *Five hours.* Fee, $10. Assistant Professor CARNEY, Mr. MCALPINE, and Dr. MELOCHE.

Course 3 may be elected by students who have completed Chemistry 2 or *2b*, with the grade A or B. Students completing one of these courses with the grade C may elect Course 3 only by special permission of the instructor in charge of this course. but students with the grade D may not elect Course 3 at all. Students who may not elect Course 3 must elect Course *3a*, and follow this with Course *3b* before taking Course 5.

3a. Qualitative Analysis. Lectures, recitations, and laboratory. *Four hours.* Fee, $10. Mr. COLE.

Course *3a* is not a complete course in itself, and it must be followed by *3b* before higher courses in Analytical Chemistry are taken. Course *3a* must be preceded by 2 or *2b*.

3b. Qualitative Analysis. Lectures, recitations, and laboratory. *Four hours.* Fee, $10. Assistant Professor CARNEY.

Course *3b* must be preceded by *3a*.

5. Quantitative Analysis. Beginning Course. Lectures, recitations, and laboratory. *Five hours.* Fee, $15. Assistant Professor WILLARD and Mr. PINKERTON.

Course 5 must be preceded by Course 3 or *3b*.

7. Organic Chemistry. Lectures, recitations, and laboratory. *Five hours.* Fee, $10. Professor GOMBERG, Mr. SCHOEPFLE, and Mr. SHERRARD.

Course 7 must be preceded by Course 3 or *3b*.

Those electing Course 7 should elect Course *7a* in the following semester, as they should properly be considered as one course extending throughout the year. These courses are taken by the students in the department of Chemical Engineering, and are intended for those who desire a fuller knowledge of the fundamental principles of organic chemistry than can be obtained in the more elementary Courses 10 and 11. Undergraduate students specializing in chemistry and all graduate students who elect organic chemistry as either the major or a minor subject should arrange to take Courses 7 and *7a*.

11. Organic Chemistry. Lectures and recitations. *Three hours.* Mr. SHERRARD.

Course 11 should, if possible, be preceded by Course *3a* or *3b*.

This course is required of second year students in the Colleges of Dentistry and of Pharmacy, and covers briefly the elementary principles of organic chemistry. Others may elect it by special permission. If elected to fulfill the requirements of the Medical School, or of the Homœopathic Medical School, it must be accompanied or followed by laboratory work, two hours or more in Course 42.

General and Physical Chemistry:

8E. Elementary Theoretical and Physical Chemistry. Lectures and recitations. This course is intended for students in Chemical Engineering and may be taken by others only by special permission. Special attention will be paid to the study of chemical equilibrium, velocity of chemical reactions, and applications of physico-chemical theory. This course must be preceded by Chemistry 3 or 3*b*, and Physics 2. A knowledge of calculus is also required. *Three hours.* Dr. HARRIS.

13. Physical-Chemical Measurements. Laboratory work. *Three to eight hours.* Fee, $15 up. Assistant Professor BARTELL.

The eight hours which are required for the completion of all the work in Course 13 may be divided between two semesters. The course must be preceded or accompanied by Courses 5 and 8.

15. History of Chemistry and Development of Chemical Theory. Lectures and seminary. *Two hours.* Professor SMEATON.

16. Laboratory Research in Inorganic Chemistry. *Credit to be arranged.* Professors BIGELOW and LICHTY.

17. Laboratory Research in Organic Chemistry. *Credit to be arranged.* Professor HALE.

18. Laboratory Research in Physical Chemistry. *Credit to be arranged.* Professors BIGELOW and SMEATON.

Courses 15, 16, 17, 18, and 21 are intended for advanced students. They are open only to persons who receive special permission from the instructor. Students electing these courses must be able to read German and French, and must have a knowledge of inorganic, organic, and analytical chemistry.

19. Seminary in Special Topics. Conferences and reading. *One to three hours.* Professor BIGELOW.

Course 19 must be preceded by Courses 8 and 13. Permission must be obtained from the instructor to elect this course.

20. German Reading. *Two hours.* Assistant Professor LEE.

The object of this course is to familiarize the student with the technical terms used in German chemical literature. Classical treatises as well as important articles in current German chemical journals will be read. This course is equivalent to German E9.

21. Research in Physical Chemistry. *Credit to be arranged.* Assistant Professor BARTELL.

This course is open only to students who have had the fundamental courses in physics and chemistry.

22. Spectroscopic Analysis and Use of the Spectroscope. One lecture and one laboratory period a week. *Two hours.* Fee, $5. Professor LICHTY.
    Course 22 must be preceded by Course 3*a*.

23. Advanced Theoretical and Physical Chemistry. Lectures and recitations. *Two hours.* Assistant Professor BARTELL.
    This course is a continuation of Course 8. Thermochemistry, electrochemistry, theory of solutions, the phase rule, and other special topics will be taken up in more detail than was possible in Course 8.

[26*b*. Stereochemistry, including a general study of isomerism. Lectures. *Two hours.* Professor HALE.
Course 26*b* must be preceded by Course 7 or 10. Omitted in 1916-1917.]

26*a*. The Heterocyclic Derivatives in Organic Chemistry. *Two hours.* Professor HALE.
Course 26 must be preceded by Course 7 or 10.

Analytical and Applied Chemistry:

28. Advanced Quantitative Analysis. Lectures, laboratory, and quiz. *Three to five hours.* Fee, $15 or $20. Assistant Professor WILLARD.
    Course 28 is open to those who have taken Course 5, and Course 2 in Physics.

31. Independent Work in Mineral Analysis. Laboratory Work. *Five hours.* Fee, $10. Professor CAMPBELL and Assistant Professor WILLARD.
    Course 31 must be preceded by Course 28. It is desirable that this course be preceded by Course 27 and also by Course 2 in Mineralogy.

32. Technical Examination of Gold and Silver Ores by the Fire Assay. Laboratory work, with lectures and reading. *Two hours, to be arranged.* Fee, $10. Dr. LAIRD.
    Course 32 must be preceded or accompanied by Course 28.
    Course 2 in Mineralogy is recommended.

33. Engineering Materials. Lectures and recitations. *Three hours.* Dr. LAIRD.
    An elementary study of the manufacture and properties of the ferrous and non-ferrous alloys, cements, clay products, and protective coatings.
    This course must be preceded by Chemistry 2 and 2*a*, 2*b* or 2E.

33*a*. Chemical Technology. Fuels and their utilization. *Two hours.* Assistant Professor BADGER.

33*b*. Chemical Technology. Clay Products, Cements, Glass. A study of the silicate industries. *Two hours.* Dr. LAIRD.

34. Chemical Reading. Reading and seminary work. *One hour.* Professor CAMPBELL.

This course is adapted to students who intend to carry on research such as is given in courses 36 or 37. As not more than 5 can be accommodated permission should be obtained before electing the course.

35. Technical Gas Analysis, including Calorimetry and Photometry. *Two or three hours.* Fee, $5. Assistant Professor BADGER.

Course 35 must be preceded by Course 5.

36. Research in Inorganic Chemistry. Special attention will be given to the chemical constitution of metals, silicates, or other substances of importance. *Credit to be arranged.* Professor CAMPBELL.

Course 36 must be preceded by Course 28, and by such courses in physical or organic chemistry as may be necessary to prepare the student to carry on the work satisfactorily.

37. Original Investigation in Analytical Chemistry. Laboratory work. *Credit to be arranged.* Professor CAMPBELL and Assistant Professor WILLARD.

Course 37 must be preceded by Course 28, and by such courses in physical or organic chemistry as may be necessary to prepare the student to carry on the work satisfactorily.

38. Chemical Technology. The industrial chemistry of organic compounds. Among the subjects treated are: starch, glucose, and sugar; fermentation and distillation; fats, oils, and soaps; bleaching and dyeing; tanning; paper manufacture. Lectures and assigned reading. *Four hours.* Professor WHITE and Assistant Professor RUE.

Course 38 must be preceded by Courses 7 and 7*a*.

39. Chemical Technology. Laboratory Course in Special Problems. Discussions once a week at hour to be arranged. *Credit three to eight hours.* Fee, $15 up. Professors CAMPBELL, WHITE, and WARE, Assistant Professors A. E. WHITE, BADGER, and RUE, and Dr. LAIRD.

The purpose of this course is to train the student in methods of independent study. Each student is, after consultation, assigned a subject connected with some manufacturing industry which he is to study intensively both in the library and laboratory. Wide latitude is allowed in the choice of a subject and the student is, so far as possible, urged to select that which interests him most.

Special permission must be obtained to elect this course, which must be preceded by Courses 28, 33, and such additional courses as the subject may require. A reading knowledge of French or preferably German, is essential.

39*a*. Chemical Technology. Seminary. Discussion of technical problems. *Two hours.* Professor WHITE.

40. Advanced Metallurgical Chemistry. Seminary on the theory of steel and properties of metallic solutions. *One hour.* Professor CAMPBELL.

Organic Chemistry:

42. Organic Chemistry. *Two to five hours.* Fee, $10-$20. Laboratory work. Mr. SCHOEPFLE and Mr. SHERRARD.

Course 42 must be preceded or accompanied by Course 10 or 11.

43. Advanced Organic Chemistry and Ultimate Analysis. Laboratory work and reading. Continuation of Courses 42 and 7*a*. *Three, four, or five hours.* Fee, $15-$20. Professor GOMBERG and Mr. SCHOEPFLE.

44*a*. Food and Drug Analysis. *Five hours.* Fee, $15. Laboratory work with reference reading. Professor SCHLOTTERBECK.

Course 44*a* must be preceded by Courses 5 and 7.

45. Advanced Organic Chemistry. Lectures and reading. *Two hours.* Professor GOMBERG.

Course 45 must be preceded by Courses 7 and 7*a*, and requires a reading knowledge of German.

49. Research in Organic Chemistry. Laboratory work. *Credit to be arranged.* Professor GOMBERG.

Course 49 requires special permission.

SECOND SEMESTER

Foundation Courses in Chemistry:

1*b*. General and Inorganic Chemistry. *Four hours.* Fee, $10. Professor LICHTY.

This course offers an opportunity for those entering the University at the opening of the second semester to commence the study of chemistry, but no student will be admitted who might have elected 1 and 1*a*. Special permission must be obtained from the instructor in order to elect this course.

2 and 2*a*. General and Inorganic Chemistry. Continuation of Courses 1 and 1*a*, the hours and credits being the same in both semesters. Fee, $10. Professor HALE.

2E. General and Inorganic Chemistry. Same as 2E the first semester. Fee, $10. Professor SMEATON.

3. Qualitative Analysis. *Five hours.* Fee, $10. Assistant Professor CARNEY and Mr. McALPINE.

This course is the same as Course 3, given in the first semester.

3*a*. Qualitative Analysis. *Four hours.* Fee, $10. Mr. COLE and Dr. MELOCHE.

This course is the same as Course 3*a*, given in the first semester.

3*b*. Qualitative Analysis. *Four hours.* Fee, $10. Assistant Professor CARNEY.

Course 3*b* must be preceded by 3*a*.

5. Quantitative Analysis. Beginning Course. *Five hours.* Fee, $15. Assistant Professor WILLARD and Mr. PINKERTON.

Course 5 must be preceded by Course 3 or 3*b*.

6. Inorganic Preparations. *Three to seven hours.* Fee, $10-$20. Professor LICHTY.

Students electing this course must have completed Course 3*a*.

Course 6 involves the study of chemical reactions and principles as they apply to the preparation of the commonly used chemicals; a study of the properties of these chemicals, the conditions under which they remain in solution, if they are soluble, and their uses in chemical operations and as illustrative materials in teaching.

7*a*. Organic Chemistry. Continuation of Course 7. *Four hours.* Fee, $10. Professor GOMBERG, Mr. SCHOEPFLE, and Mr. SHERRARD.

8. Elementary Theoretical and Physical Chemistry. *Four hours.* Professor BIGELOW.

This course must be preceded by Courses 3 or 3*b*. It may be elected by students planning to take the seven year Combined Literary-Medical Curriculum, on the completion of Course 3*a*. Physics 2 is strongly recommended.

9. Inorganic Chemistry. Descriptive and experimental lectures, including selected topics. Continuation of Courses 1 and 2. *Three hours.* Professor LICHTY.

Course 9 must be preceded or accompanied by Course 3 or 3*a*.

If students who elect Course 9, will also elect Course 6, they will be given an opportunity of making a number of the substances studied in the former course.

10. Organic Chemistry. *Four hours.* Lectures and recitations. Professor GOMBERG.

Course 10 should be preceded by Course 3*a* or 3*b*.

This course is intended for students preparing to enter the Medical School or the Homœopathic Medical School. (Compare Course 11). It may also be taken by all those who desire to obtain a more elementary knowledge of the principles of organic chemistry than is covered by Courses 7 and 7*a*.

General and Physical Chemistry:

13. Physical-Chemical Measurements. *Three to eight hours.* Fee, $15 up. Assistant Professor BARTELL.
The eight hours which are required for the completion of all the work in Course 13 may be divided between two semesters.
The course must be preceded or accompanied by Courses 5 and 8.

14. Electrochemistry. Lectures. *Two hours.* Assistant Professor BARTELL.
The fundamental principles of the subject and consideration of instances of their application in analytical chemistry and in industrial processes.
Course 14 must be preceded by Course 8. Course 5 in Physics is recommended.

15. History of Chemistry and Development of Chemical Theory. *Two hours.* Lectures and seminary. Professor SMEATON.
Chemistry 15 will be given each semester as a two hour course, covering the same ground as Courses 15 and 15*a* given heretofore.

16. Laboratory Research in Inorganic Chemistry. *Credit to be arranged.* Professor BIGELOW, Professor LICHTY.

17. Laboratory Research in Organic Chemistry. *Credit to be arranged.* Professor HALE.

18. Laboratory Research in Physical Chemistry. *Credit to be arranged.* Professors BIGELOW and SMEATON.
Courses 15, 16, 17, 18, and 21 are intended for advanced students. They are open to persons who receive special permission from the instructor. Students electing these courses must be able to read German and French, and must have a knowledge of inorganic, organic, and analytical chemistry.

19. Seminary in Special Topics. Conferences and reading. *One to three hours.* Professor BIGELOW.
Course 19 must be preceded by Courses 8 and 13. Permission must be obtained from the instructor to elect this course.

20. German Reading. The same as Course 20 in the first semester. Assistant Professor LEE.

20*a*. French Reading. *One hour.* Assistant Professor LEE.
This course is of the same nature as the German Course (20).

21. Research in Physical Chemistry. *Credit to be arranged.* Assistant Professor BARTELL.
The course is open only to students who have had the fundamental courses in physics and chemistry.

23*b*. Chemistry of Colloids. *Two hours.* Assistant Professor BARTELL.

To be preceded by the fundamental courses in physics and chemistry.

Permission must be obtained from the instructor to elect this course.

24. Theory and Practice of Exact Measurements, with laboratory practice in glass blowing, calibration, and construction of apparatus. One lecture and one or two laboratory periods. *Two or three hours.* Fee, $5 up. Assistant Professor BARTELL.

Special permission must be obtained from the instructor in order to elect this course.

25. Thermodynamics Applied to Chemistry. This course is open to those who have had Course 8. A knowledge of calculus is also required. *One hour.* Dr. HARRIS.

25*a*. Chemistry of Soils and Fertilizers. This course is open, by special permission, to those who have had Courses 1 and 2 or their equivalent. *One hour.* Dr. HARRIS.

Analytical and Applied Chemistry:

27. Chemistry of the Rarer Elements. *Two hours.* Assistant Professor CARNEY.

Course 27 must be preceded by Course 3 or 3*b*.

27*a*. Chemistry of the Rarer Elements. *Two hours.* Assistant Professor CARNEY.

Course 27*a* must be preceded by Course 27.

28. Advanced Quantitative Analysis. *Three to five hours.* Fee, $15 or $20. Assistant Professor WILLARD.

Courses 28 is open to those who have taken Course 5, and Course 2 in Physics.

31. Independent Work in Mineral Analysis. Laboratory work. *Five hours.* Fee, $20. Professor CAMPBELL and Assistant Professor WILLARD.

Course 31 must be preceded by Course 28. It is desirable that this course be preceded by Course 27 and also by Course 2 in Mineralogy.

33. Engineering Materials. The same as 33 the first semester. Dr. LAIRD.

33*c*. Chemical Technology. Salts, Acids, and Alkalies, including some Electrolytic and Electrothermal processes. *Two hours.* Professor WHITE.

Course 33*c* must be preceded by Course 5 and by Course 2 in Physics. Course 8 is recommended.

34. Chemical Reading. Reading and seminary work. *One hour.* Professor CAMPBELL.

Course 34 requires special permission.

35. Technical Gas Analysis, including Calorimetry and Photometry. *Two or three hours.* Fee, $5. Assistant Professor BADGER.

Course 35 must be preceded by Course 5.

36. Research in Inorganic Chemistry. Special attention will be given to the chemical constitution of metals, silicates, or other substances of importance. *Credit to be arranged.* Professor CAMPBELL.

Course 36 must be preceded by Course 28 and such courses in physical or organic chemistry as may be necessary to prepare the student to carry on the work satisfactorily.

37. Original Investigation in Analytical Chemistry. Laboratory work. *Credit to be arranged.* Professor CAMPBELL and Assistant Professor WILLARD.

Course 37 must be preceded by Course 28 and such courses in physical or organic chemistry as may be necessary to prepare the student to carry on the work satisfactorily.

39. Chemical Technology. Laboratory work. *Three to eight hours.* Fee, $15 up. Professors CAMPBELL, WHITE, and WARE, and Assistant Professors A. E. WHITE, BADGER, and RUE, and Dr. LAIRD.

Special permission must be obtained to elect this course, which must be preceded by Courses 28, 33, and such additional courses as the subject may require. A reading knowledge of French, or preferably German, is essential.

The purpose of this course is to train the student in methods of independent study. Each student is, after consultation, assigned a subject connected with some manufacturing industry which he is to study intensively both in the library and laboratory. Wide latitude is allowed in the choice of a subject and the student is, so far as possible, urged to select that which interests him most.

Organic Chemistry:

42. Organic Chemistry. *Two to five hours.* Fee, $10-$20. Laboratory work. Mr. SCHOEPFLE and Mr. SHERRARD.

Course 42 must be preceded or accompanied by Course 10 or 11.

43. Advanced Orgenic Chemistry and Ultimate Analysis. Laboratory work and reading. Continuation of Courses 42 and 7*a*. *Three, four, or five hours.* Fee, $15-$20. Professor GOMBERG.

44. The Chemistry of Alkaloids. *Four hours.* Fee, $15. Professor SCHLOTTERBECK.
Course 44 must be preceded by Courses 5 and 7.

44*a*. Food and Drug Analysis. *Five hours.* Fee, $15. Laboratory work with reference reading. Professor SCHLOTTERBECK.
Course 44*a* must be preceded by Courses 5 and 7.

[46. Advanced Organic Chemistry. Lectures and reading. Continuation of Course 45, first semester. *Two hours.* Professor CONE. Omitted in 1916-1917.]

49. Research in Organic Chemistry. Laboratory work. *Credit to be arranged.* Professor GOMBERG.
Course 49 requires special permission.

METALLURGY

FIRST SEMESTER

6. Metallurgy of Iron and Steel. *Two hours.* Assistant Professor WHITE.
A detailed study of the methods employed in the production of the various iron and steel products; thermal studies of some of the major operations; correlation of the physical properties of the metals and their heat and mechanical treatment.

8. Metallography. *Two hours.* Assistant Professor WHITE.
An introductory course dealing with the constitution of iron and steel. A detailed study is made of the iron-carbon system, the constitution of cast irons, steels, special steels, case hardened steels, etc. Typical specimens of the above types of metals are examined.
Laboratory work one afternoon a week, *Tu* or *F.* Fee, $3.00. Open only to those who have completed Course 6.

18. Metals and Alloys. Class and laboratory work. *Three or five hours.* Both semesters. Assistant Professor A. E. WHITE. Open to those who are taking or have taken Metallurgy 8.
A detailed study of the properties of selected types of metals and alloys with special reference to the correlation of their mechanical properties with those shown by chemical and microscopic examination. In the laboratory the student will heat-treat the specimens, trace cooling curves, and make metallographic examinations.

7. Metallurgy of the Non-Ferrous Metals. *Two hours.* Lectures and reading.
A study of the constitution and factors affecting the properties of copper, zinc, lead, tin, nickel, aluminum, bronzes, special

bronzes, brasses, special brasses, special copper alloys, special aluminum alloys, solders, and bearing metals, including a brief survey of the methods employed in the recovery of the metals from their ores

Open to those who have completed Chemistry 33. Assistant Professor WHITE.

SECOND SEMESTER

8. Metallography. Same as 8 the first semester. Assistant Professor WHITE.

18. Metals and Alloys. Same as 18 the first semester. Assistant Professor WHITE.

MINERALOGY AND PETROGRAPHY

All courses offered by this department are given in the Mineralogical Laboratory which is located in the northeast corner of the new Natural Science Building. The mineral collections, Room M 222, are open for inspection daily throughout the session, from 9 to 12 A. M. and 2 to 4 P. M.

Courses 1, 2, 17, and 17*a* are beginning courses. Course 1 is open to all students desiring an elementary knowledge of Mineralogy, and is given both semesters, but students of Forestry should elect it, if possible, the first semester, and students of Pharmacy the second. Course 1 may be followed to advantage by Courses 4 and 5, or 9. Those desiring a more comprehensive beginners' course are advised to elect Course 2, which serves as the basis for the more advanced work of the department. Course 17 is designed to give a general knowledge of gems and gem minerals, and is open to all students, no previous training in mineralogy or the sciences being necessary. Students desiring a more intimate knowledge of gems should also elect the laboratory work, designated as Course 17*a*. Students of Chemistry and Chemical Engineering are advised to take Course 2 and 5, or Courses 1, 4, and 5. Students of Forestry are required to take Courses 1 and 9, and are advised to elect, if possible, Courses 4 and 5. For advanced students of Geology, Courses 2, 5, 6, 9, 10, and 11, are strongly recommended. For all courses involving laboratory work, a fee of $1.00 will be charged for each hour of credit given.

Consultation Hours.—Throughout registration week, September 27 to October 4, Professor KRAUS, or a representative, will be in his office, 10-12, daily, to advise students desiring to elect courses in Mineralogy.

During the year Professor KRAUS, 9 to 9:30 A. M., daily. Room M 227, N. S.

Assistant Professor HUNT, 10 to 11 A. M., daily. Room M 335, N. S.

FIRST SEMESTER

1. Elements of Mineralogy. Lectures and laboratory work. *Two hours.* Professor **Kraus**, Assistant Professor **Hunt**, Mr. **Peck**. and assistants.

   This course includes the elements of crystallography, physical and chemical properties, occurrence, uses, and determination of the more common minerals. For this course a knowledge of elementary inorganic chemistry is necessary.

2. General Mineralogy. Lectures and laboratory work. *Five hours.* Professor **Kraus**, Assistant Professor **Hunt**, and assistants.

   Students who have successfully completed Course 1 may elect this course as Course 2*a* and receive *three hours* credit.

   Principles of crystallography, physical and chemical properties, origin, formation, decomposition, distribution, uses, and determination of the more important minerals. Prerequisites, Chemistry 2 and 3.

3. Crystal Measurements. Measurement, calculation, and projection of crystals. Lectures and laboratory work. *Three hours.* Assistant Professor **Hunt** and Mr. **Peck**.

   This course is given both semesters and may be pursued for either one or two semesters. Prerequisite, Course 2.

4. Determinative Mineralogy. Laboratory work. *Two hours.* Assistant Professor **Hunt**.

   Intended for students who have completed Course 1 or 2 and wish to become more proficient in the determination of minerals by means of their physical characters.

6. Physical Crystallography. Lectures and laboratory work. *Four hours.* Professor **Kraus** and Mr. **Peck**.

   This course involves a critical study of the various properties of crystals, including the use of the polarizing microscope and other crystallographic-optical instruments. Must be preceded by Course 2 and, if possible, by Course 3.

   Students desiring to study only the optical properties of crystals may elect this course as 6*a* and receive *three hours credit.*

   Of courses 6 and 14, the one will be given which is desired by the greater number of students.

7. Current Literature of Mineralogy. *One or two hours.* Assistant Professor **Hunt** and Mr. **Peck**.

   This course consists of discussions, translations, and abstracts of important current literature.

8. Research Work. Laboratory work. *Credit to be arranged.* Professor **Kraus**, Assistant Professor **Hunt**, and Mr. **Peck**.

   For students, who are properly qualified, opportunity is given for original research along the lines of crystallographic measurements, chemical crystallography, the formation and origin of minerals, blowpipe methods, and petrography.

9. Lithology. Lectures and laboratory work. *Two hours.* Mr. PECK.

The lectures include, aside from a review of the rock-forming minerals, a discussion of the origin, modes of occurrence, alterations, methods of determination, and uses of the more important rocks. In the laboratory the student is required to determine by means of the macro-physical properties a large number of rock specimens. Field excursions will also be made in order to acquire facility in the rapid determination of rocks in the field. Prerequisites, Mineralogy 1 and Geology 1.

10. Petrography. Lectures and laboratory work. *Three, four, or five hours.* Mr. PECK.

After reviewing the optical characters and methods of investigation of crystals, the various properties of the important rock minerals are discussed in detail. The mineralogical and chemical composition, texture, genesis, forms of occurrence and metamorphism of rocks are then studied. The laboratory work is devoted to the systematic study of rock minerals and rocks with the aid of the polarizing microscope. Prerequisites, Mineralogy 2 or 1 and 4, 6 or 6*a,* and 9.

12. Quantitative Blowpipe Methods. Reading and laboratory work. *Two hours.* Assistant Professor HUNT.

Practice in assaying by blowpipe methods of various kinds of ores, especially those of gold, silver, copper, and lead. Prerequisite, Course 5.

13. Special Petrographic Methods. Assigned readings and laboratory work. *Two hours.* Mr. PECK.

This course includes (a) determination by micro-chemical tests of rock-forming minerals, which are otherwise difficult of differentiation; (b) determination of the indices of refraction and other optical properties of mineral fragments; and (c) microscopical investigation of sands, clays, and so forth.

15. Advanced Qualitative Blowpipe Analysis. Reading and laboratory work. *Credit to be arranged.* Assistant Professor HUNT.

This course involves the application of blowpipe and other chemical methods in determining the less common minerals, and those containing some of the rarer elements. Prerequisites, Mineralogy 5 and Chemistry 3 or 3*a* and 3*b*.

SECOND SEMESTER

1. Elements of Mineralogy. Lectures and laboratory work. *Two hours.* Professor KRAUS, Assistant Professor HUNT, and assistants.

This course includes the elements of crystallography, physical and chemical properties, occurrence, uses, and determination of the most common minerals, and also an introduction to the use of the polarizing microscope. For this course a knowledge of elementary inorganic chemistry is necessary.

17. Gems and Previous Stones. Lectures and demonstrations. *Two hours.* Professor **KRAUS.**

This course discusses the general properties, occurrence, determination, and history of the various minerals used as gems and gem minerals. The various methods of distinction, especially from imitations and synthetic gems, will also be considered. No previous training in mineralogy or the sciences is required, although an elementary knowledge of chemistry and physics is highly desirable.

This course may be accompanied to advantage by Course 17*a*.

17*a*. Gems and Precious Stones. Laboratory work. *One hour.* Professor **KRAUS**, Assistant Professor **HUNT**, and assistants.

Students will be given an opportunity to familiarize themselves with the various methods used in the scientific determination of gems and gem minerals. Three hours a week in the laboratory to be arranged. Must be accompanied or preceded by Course 17.

3. Crystal Measurements. Measurement, calculation, and projection of crystals. Lectures and laboratory work. *Three hours.* Assistant Professor **HUNT** and Mr. **PECK.**

This course is given both semesters and may be pursued for either one or two semesters. Prerequisite, Course 2.

4. Determinative Mineralogy. Laboratory work. *Two hours.* Assistant Professor **HUNT.**

Intended for students who have completed Course 1 or 2 and wish to become more proficient in the determination of minerals by means of their physical characters.

5. Qualitative Blowpipe Methods. *Two hours.* Assistant Professor **HUNT.**

This course involves the use of blowpipe reactions upon charcoal and plaster tablets, as well as other chemical methods useful in the determination of minerals. Prerequisites, Course 2 or Courses 1 and 4 in Mineralogy, or Courses 3*a* and 3*b* in chemistry.

8. Research Work. Laboratory work. *Credit to be arranged.* Professor **KRAUS**, Assistant Professor **HUNT**, and Mr. **PECK.**

For students, who are properly qualified, opportunity is given for original research along the lines of crystallographic measurements, chemical crystallography, the formation and origin of minerals, blowpipe methods, and petrography.

9. Lithology. Lectures and laboratory work. *Two hours.* Mr. **PECK.**

The lectures include, aside from a review of the rock-forming minerals, a discussion of the origin, modes of occurrence, alterations, methods of determination, and uses of the more important rocks. In the laboratory the student is required to determine by means of the macro-physical properties a large number of rock specimens. Field excursions will also be made in order to acquire facility in the rapid determination of rocks in the field. Prerequisites, Mineralogy 1 and Geology 1.

11. Petrography. Lectures and laboratory work. *Three, four or five hours.* Mr. Peck.
This is a continuation of Course 10.

14. Chemical Mineralogy. Lectures and discussions. *Three hours.* Professor Kraus.
A critical study of the various chemical properties of crystals and minerals.
Must be preceded by Course 2 or its equivalent. A reading knowledge of scientific German is also necessary.
Of Courses 14 and 6, the one will be given which is desired by the greater number of students.

GEOLOGY AND GEOGRAPHY

The courses in Geology and Geography are planned to meet the requirements of: (a) those desiring a general knowledge of Geology as part of a liberal education (Courses 25*a* and 25*b* or 1*a* and 1*b*); (b) those planning to specialize in history, political science or political economy (Courses 25*a*, 25*b*, 31, 32, and 33); (c) students of engineering whose profession makes some knowledge of geology essential (Course 1E, and if possible, 15, 16*a*, and 16*b*); (d) teachers of earth science in secondary schools (Courses 25*a* and 25*b*, 1*a*, 3, and 12; while 1*b*, 6, 13, 15, 31, and 33 are also recommended); (e) students of forestry (Courses 1E and 15F, and, if possible, 26); and (f) professional geologists.

Students who intend to become professional geologists and who look forward to teaching positions or to places in State or Federal Geological Surveys, are enjoined early in their course to elect physics, chemistry, mineralogy, and, if possible, Courses 12 and 13 in surveying. Inasmuch as the surveying courses are given in the College of Engineering, the permission of the Dean of the College of Literature, Science, and the Arts is necessary in order to elect them. Students who intend to specialize in palentology are required to have some knowledge of elementary biology.

Except by special permission, Courses 25*a* and 25*b* are the only ones open to freshmen. In general, Courses 1*a* and 1*b* or their equivalent are considered prerequisite to more advanced courses of the department; except that in the case of those intending to specialize in economic geology, Course 1E should by preference be substituted, and that Courses 25*a* and 25*b* may be followed directly by 3, 12 and 31, and with special permission by 1*b*. Course 1*a*, though it may be elected separately, should be followed by 1*b*; both being equally essential to an understanding of the fundamental principles of geology.

A study who is planning extended work in geology will find it to his or her advantage to take Courses 25*a* and 25*b* in the freshman year and 1*a* and 1*b* (or in some cases 1E) in the sophomore year; so that at the beginning of the junior year geological studies can be continued under the advice of the department along some one or more of the lines; dynamical and structural geology, stratigraphical geology, and paleontology, physiography, geography, glacial geology, economic geology, etc.

Research is especially encouraged along each of the lines above enumerated, and students are encouraged to go on to graduate work as candidates for the higher degrees. One or more advanced students may generally make arrangements for summer field work in connection with collecting trips in paleontology.

Consultation Hours.--Throughout registration week, September 27 to October 4, Professor HOBBS will be in Room G 223, N. S., 10-12 daily, to advise students desiring to elect courses in Geology.

FIRST SEMESTER

25*a*. Physiography. An introductory course in the study and appreciation of land forms and a general treatment of weather and climate. This course is open to first year students and together with 25*b* is intended to lay the foundation for later work in geography and to furnish a broader outlook in courses in history, political science, and political economy. Lectures and recitations. *Four hours.* Excursions to nearby points of interest on Wednesday afternoons during October and November. Assistant Professor SCOTT and assistants.

Juniors and seniors may elect this course as Course 25*d* and will receive *three hours* credit.

1*a*. The Meaning of Earth Features. An introductory course in dynamical and structural geology intended to prepare the student for the equally important subject of historical geology (1*b*), as well as to supply the need for cultural treatment of physical geology. The course consists of illustrated lectures and weekly recitations, supplemented by excursions. *Three hours.* Excursions (until Thanksgiving Day) Wednesday afternoons. Professor HOBBS, and assistants.

1*c*. Geological Laboratory. To be elected only in connection with 1*a*. *One hour.*

1E. Introduction to Geology, for Engineering and Forestry Students. A course adapted to the needs of students in these departments and not open to others except by special permission. Lectures, recitations, and laboratory. *Three hours.* One excursion. Professors HOBBS and CASE, and assistants.

3. Physiography. An advanced course in which the various land forms, their manner of formation, and the underlying principles will be discussed. The course will consist of lectures, laboratory and field work, and reports on readings of the more important physiographic monographs. It is strongly advised that Course 25*a* or 1*a* be taken as a prerequisite. *Three hours.* Assistant Professor SCOTT and assistant.

4*a*. Systematic Invertebrate Paleontology. Lectures and laboratory. *Three hours.* Professor CASE and assistant.

A course extending through the year, describing the origin and development of invertebrate animals. The principles of evolution and distribution as illustrated by the invertebrates are carefully worked out; the fossils are also treated as an aid in the study of stratigraphic geology. Work in invertebrate paleontology can be continued by special arrangement. Given in 1916-1917 and alternate years.

[5. The Origin, Structure, and Growth of Mountains. A course for advanced students and treating the conditions which give rise to mountains, the seismic and volcanic phenomena connected with their growth, the mechanics of folding and the types of flexures in mountain ranges. Given in 1917-1918 and alternate years. *Four hours.* Professor HOBBS. Omitted in 1916-1917.]

7. Characteristics of Existing Glaciers. *Four hours.* Professor HOBBS.

A course of lectures and reading assignments upon the existing glaciers, with special emphasis upon their morphology, the conditions of their nourishment and waste, and their reactions with the lithosphere. Special attention is given to the continental glaciers of high latitudes and their relations to the former ice-sheets which are treated in Courses 18, 20, and 21. Given in 1916-1917, and alternate years.

8. Current Literature of Geology. Graduates and other advanced students of the department will be expected, and others are invited, to meet one hour each week for reports and discussions of the recent literature of geology. *One hour.* Professors HOBBS and CASE, Assistant Professors SCOTT and COOK, Dr. SAUER, and Mr. LEVERETT.

9*a*. Systematic Vertebrate Paleontology. *Three hours.* With laboratory work and reading. Professor CASE.

A course extending through the year, describing the origin and development of vertebrate animals. The principles of evolution and distribution as illustrated by the vertebrates are carefully worked out; the fossils are also treated as an aid in the study of stratigraphic geology. Given in 1916-1917 and alternate years.

[11*a*. Interpretation of Geologic Maps. A course designed to give the student practice in the interpretation of geologic maps together with a detailed knowledge of the structural geology of typical regions in the United States. *Three hours.* (Given in 1917-1918 and alternate years.) This course to be followed by 11*b*. Assistant Professor COOK.]

13. Evolution of Man and the Domestic Animals. *Two hours.* Professor CASE.

A lecture course describing in a popular way the origin of man and the domestic animals. Especial attention is paid in this course to the early history of mankind and the stages of culture through which he has passed in attaining civilization.

15. Soil Geology. A course designed to meet the needs of students in Engineering and Landscape Design as well as others desiring a less extended treatment of the subject than given in Course 15F. *Three hours.* Assistant Professor COOK.

The attention of students desiring additional laboratory work is directed to Course 26.

16*a*. Economic Geology (non-metals). A general course treating of the nature, occurrence, and distribution of the non-metallic mineral resources such as coal, oil and gas, salt, gypsum, building stones, phosphate rock, etc. *Three hours.* Assistant Professor COOK.

17. Metamorphism. A study of geology from the physico-chemical standpoint. This course is essential to an understanding of the origin and character of ore deposits. Prerequisites are Geology 1*a* and Mineralogy 2 or their equivalent, and a course in physical chemistry is strongly recommended. *Three hours.* Given in 1916-1917 and alternate years. Assistant Professor COOK.

26. Soil Geology. Laboratory work. *One to three hours credit.* Assistant Professor COOK.

This course must be preceded or accompanied by Course 15 or 15F.

31. Commercial Geography. Geographic elements in the production and exchange of the principal commodities of world commerce. An introductory study is made of the production of raw materials, such as of farm, range, forest, and mine, and of the localization of manufactures. The movement of world commerce is considered in a large way, including routes of trade, extent to which different countries participate in trade, and the location and significance of commercial centers. The course is designed to be of general interest, and is also intended for students of business administration, and for those

preparing for consular service. *Three hours.* One or more excursions to industrial plants will be given. Dr. SAUER, and assistant.

32. Geographic Influences in American History. The place of geographic factors in the history of our country. Geographic influences are compared with each other and with non-geographic factors. The study of the settlement and development of the United States is accompanied by an analysis of geographic influences on governmental policies at critical periods, and on the conduct of wars. For students of history and others. Prerequisite, Geology 25*b*. It is desirable that History 13 and 14 also precede this course. *Three hours.* Dr. SAUER.

SECOND SEMESTER

25*b*. General Geography. Influence of environment on the conditions and activities of man. Location, area, land forms, types of climate, relations of land and water, and material resources and considered in their effects upon social and economic condition and upon the distribution of races and nations. Type illustrations are selected from many regions and afford drill in geographic location.. Prerequisite, 25*a* or its equivalent, except by special arrangement. Lectures and recitations. *Four hours.* Excursions after Easter, to be arranged. Dr. SAUER and assistants.

Juniors and seniors may elect this course as Course 25*e* and will receive *three hours* credit.

1*a*. The Meaning of Earth Features. A repetition of Course 1*a* of the first semester. Illustrated lectures. Excursions on Wednesday afternoons after Easter. Professor HOBBS and assistants.

1*c*. Geological Laboratory. To be elected only in connection with Geology 1*a*. *One hour.* Room G 325, N. S.

1E. Introduction to Geology for Engineering and Forestry Students. A course adapted to the needs of students in these departments and not open to others except with special permission. *Three hours.* One excursion. Professors HOBBS and CASE, and assistants.

1*b*. Historical Geology. An introductory course in historical and stratigraphical geology designed to follow Geology 1*a* so as to give the student a comprehensive idea of the scope of geology. This course gives an outline history of the development of the North American continent and its relation to other continents; the distribution of the various rocks upon the surface with something of their relation to economic products and geographical features; the origin and development of plants and animals in geological time. *Three hours.* A few excursions will be taken. Professor CASE and assistant.

4*b*. Systematic Invertebrate Paleontology. *Three hours.* Professor Case and assistant.

This course is a continuation of Course 4*a*, given in the first semester.

6. Field Geology. In this course the methods of geological field work will be discussed and practice given in the use of the more important instruments necessary for the prosecution of such work. The major portion of the work will be in the field in the vicinity of Ann Arbor. *Two hours.* Assistant Professor Scott.

This course may be elected as 6*a*. *Three hours credit.*

9*b*. Systematic Vertebrate Paleontology. *Three hours.* With laboratory work and reading. Professor Case. Given in 1916-1917 and alternate years.

This course is a continuation of Course 9*a*, given in the first semester.

[10. History of Geology. An advanced course treating of the development of the science of Geology and of the lives and teachings of its founders. *Three hours.* Professor Hobbs. Given in 1917-1918, and alternate years.]

[11*b*. Stratigraphical Geology of North America. An account of the development of the continent as recorded in the deposits, the faunal changes, and the diastrophic movements. The subject will be treated in a broad way, all possible matter bearing on the history of the continent being introduced and the student directed to the sources of information. *Three hours.* Professor Case. Given in 1917-1918, and alternate years.

Prerequisite; Course 11*a*.]

12. Elementary Meteorology. This course is designed to follow the course in physiography and is an elementary treatment of the dynamics of the atmosphere. In it will be discussed the properties and movements of the atmosphere, weather and its variations, together with some account of weather predictions. *Two hours.* Assistant Professor Scott.

14. Tectonic Geology. An advanced course which treats of the larger problems of the tectonics of the globe as developed especially by Eduard Suess in his *The Face of the Earth.* The work will be conducted by reports and discussions on the seminary plan of specially selected chapters from the four volumes of the work cited. *Four hours.* Professor Hobbs. Given in 1916-1917 and alternate years.

15F Soil Geology. (For Foresters and others possessing the necessary preparation. See first semester.) A comprehensive survey of the subject including the origin of soils, their physical and chemical constitution, the influence of climate on soil fertility, irrigation and drainage, tillage, fertilizers, etc., and a consideration of the regolith of the United States in relation to geologic, physiographic, and climatic factors. Geology 1*a* or 1E and Mineralogy 1 and 9 are prerequisites. *Three hours.* (The attention of students desiring additional laboratory work is directed to Course 26.) Assistant Professor COOK.

16*b*. Economic Geology (metals). In this course the metallic mineral resources are treated in the same manner as are the non-metallic resources during the first semester. Although this course may be elected independently of Geology 16*a*, both are essential to a general survey of the subject. *Three hours.* Assistant Professor COOK.

19. Ore Deposits. A detailed study of the character, origin, and exploitation of the iron, lead, zinc, copper, silver, and gold ores. This course should be preceded by Geology 1*b* and 17. Geology 16*b* is also recommended. *Three hours.* Given in 1916-1917 and alternate years. Assistant Professor COOK.

20. Pleistocene Glaciation of North America and Europe. A course of twelve lectures dealing with pleistocene glacial history. *One hour.* (See course 21.) Mr. LEVERETT.

21. Glacial Field Studies. Weekly field excursions to study the glacial formations accessible from Ann Arbor. Supplementary to Course 20. *One hour.* Mr. LEVERETT.

22. Research and Special Work. The department is prepared to direct research work along several distinct lines, viz., in Dynamical and Structural Geology, Stratigraphical Geology, in Glacial Geology, in Paleontology, in Physiography, and in problems involved in the deposition of ores. Professors HOBBS and CASE, Assistant Professors SCOTT and COOK, Dr. SAUER, and Mr. LEVERETT.

26. Soil Geology. Laboratory work. *One to three hours credit.* Assistant Professor COOK.

This course must be preceded or accompanied by Course 15 or 15F.

33. Geography of North America. First course in regional geography. A systematic study of the United States, Canada, Alaska, Mexico, and the West Indies with special reference to industrial and commercial conditions and opportunities and the distribution of population. Prerequisite, Geology 31 or 25*b*. *Three hours.* Dr. SAUER.

34. Field Course in Regional Geography. The work will consist of (a) an individual and intensive field study of geographic conditions in a selected region, and (b) of a systematic paper on the geography of the region. Detailed mapping and census taking will be required to illustrate type conditions. Prerequisites: Geology 3, 15, and 33. *Credit to be arranged,* and will depend upon the amount of field work and the nature of the paper. Dr. SAUER.

GENERAL BIOLOGY

Courses 1 and 2 in General Biology are no longer given as such. In place of General Biology, students should elect Zoology 1 or 1*a,* and Botany 1 or 1*a,* which must be taken in successive semesters. These courses should, if possible, be taken during the student's first year of residence. For regulations concerning their elections see the descriptions under the departments of Zoology and Botany, respectively.

First year students should not elect Zoology and Botany at the same time. To complete a year's work in Biology they should elect either Zoology or Botany in the first semester and must then elect in the second semester the subject not taken in the first. Students who expect to take Zoology 1 or 1*a,* Botany 1 or 1*a,* and Organic Chemistry 10, all in one year (the second) should elect Zoology in the first semester and Botany and Organic Chemistry in the second semester. Students who are not in their first year may elect both Zoology and Botany in the same semester.

The attention of students who propose eventually to take up the study of medicine is called to the announcement of the Combined Curriculum in Letters and Medicine, leading to the degrees of Bachelor of Arts and Doctor of Medicine, given on Page 132.

ZOOLOGY

The department of Zoology occupies the northwest portion of the new Natural Science building. The easiest approach from the interior of the Campus is by the west entrance to the auditorium in the Natural Science building.

Rooms in the basement are numbered from 145 to 161 inclusive; on the second floor, from 229 to 242 inclusive; on the third floor, from 337 to 355 inclusive; and on the fourth floor, from 449 to 472 inclusive.

Consultation Hours. — All students who expect to do advanced work in Zoology should confer with the *advisory committee of the department* before making elections. This committee, which consists of Professors REIGHARD, GLASER, and LA RUE, will meet in Room Z 231, N. S., at the following hours: Wednesday, Sept. 27—Wednesday, Oct. 4, at 10 A. M. Other hours will be posted on the department bulletin board. First year students who elect Zoology 1 or 1*a* should consult the Committee on Elections.

For consultation hours of individual members of the Zoological faculty consult the departmental bulletin board, near the door of Room Z 229, N. S.

FIRST YEAR ELECTIVES.—Course 1 or 1*a* should precede all other Zoology courses except 3, 3*a*, and 24. Premedical students, forestry students, and all others who elect Zoology 1 or 1*a* in either semester of his freshman year, must take Botany 1 or 1*a* in the other semester

SECOND YEAR ELECTIVES.—Those who elect Zoology 1 or 1*a* in the first semester of their second or later years may take Zoology 5 or 7 in the second semester of the same year.

Advice to Students.—The work of the Zoological department is planned to meet the needs of the following classes of students:

1. *Those seeking as part of a liberal education a knowledge of the concrete facts and the theories of biology,* should take the courses listed as introductory, (Courses 1 or 1*a*, 3, 3*a*, and 24), but may in addition pursue to advantage any of the following courses: 4, 5*a*, 7, 8, 8*a*, 9, 19, 20, 25. The order of the election of these courses will vary with the needs of the student and should be determined after consultation with the advisory committee of the department.

2. *Students who are preparing to study medicine or dentistry* and who have had Courses 1 or 1*a* in Zoology and in Botany or their equivalent, should take Courses 5 or 5*a*, and 9, and as many as possible of the following courses: 9*a*, 10, 10*a*, and 19, preferably in the order named.

3. *Students of Forestry* are required to take, after Courses 1 or 1*a* or their equivalent, Courses 3, 20, and 6, and should if possible elect them in the order named. The attention of students intending to study for the degree of Master of Science in Forestry is called to the special bulletin describing the Curriculum in Forestry.

4. *Students preparing to teach Zoology in secondary schools* are *advised* to elect, preferably in the order given, the following courses: 1 or 1*a*, 8, 8*a*, 3, 18, (18*a*), (4), 5 or 5*a*, 7, (3*a*), Education 4*g*. Those who wish to receive the departmental recommendation to teach Zoology as their principal subject in secondary schools are ***required*** to complete satisfactorily all of these courses or their equivalent, except those enclosed in parentheses. Those who are specializing in another field but who wish a recommendation to teach Zoology as a secondary subject must elect as a minimum Courses 1 or 1*a*, 8, 8*a*, 3, 7, and Education 4*g*, or one of the other observation courses given in the department of Education.

5. *Students who wish to become regular assistants in the department,* or who expect to become professional zoologists should elect after Courses 1, or 1*a*, Courses 18 and 18*a*. Students in these

courses are treated as *Voluntary Assistants* and are given an opportunity to become acquainted with the methods of conducting a laboratory. For details see the announcement of these courses. To gain entrance to Courses 18 and 18*a* the student must have attained a satisfactory grade in Courses 1, or 1*a*. Other things being equal, those who have held voluntary assistantships will be given preference in the selection of the regular assistants in the department.

6. *Candidates for the higher degrees* should consult the Announcement of the Graduate School. Their work should be selected only after consultation with the advisory committee of the department, but will always include Courses 12, and 13. Those who expect to teach should arrange their work to include the courses not in parentheses in the first lists of paragraph 4 above.

Laboratory Work.—The time necessary each week for the average student to do the laboratory work of each course is indicated by the number of required laboratory periods of three hours, but varies with the capacity of the student. Students must do their laboratory work during the regularly scheduled hours, but those for whom this time is insufficient will have an opportunity to complete the work at other hours.

A laboratory fee of one dollar for each credit hour is required in courses that include laboratory or field work. The fee should be paid to the University Treasurer and the receipt presented to the instructor at the time of enrolling in the course.

Related Courses in other Departments.—The department of Zoology does not offer courses on fossil animals, but students of Zoology should consult the announcement of the department of Geology, where courses in *Paleontology* are described.

Students interested in the philosophical aspects of biology will find courses in this field offered in the department of Philosophy.

Biological Station

Courses in the Natural History of Vertebrate Animals, Invertebrate Animals, Birds and Insects, and research work in fishes, arthropods, and parasitic worms, are offered at the University of Michigan Biological Station situated on Douglas Lake, Cheboygan County, Michigan, during the summer session. For details of the courses given at the Biological Station see special bulletin.

Woods Hole Scholarship

Through the kindness of Doctor Bryant Walker the University is able to offer a scholarship which pays the tuition of one student at the Marine Biological Laboratory, Woods Hole, Mass., during the summer session of six weeks. Six hours credit may be obtained at this University for work done at Woods Hole. Application should be made to Professor REIGHARD.

FIRST SEMESTER

*I. Introductory Courses.**

1. Elements of Animal Biology. Lectures, recitations, and laboratory. *Four hours.* Professor SHULL, Assistant Professor LA-RUE, Mr. OKKELBERG, and assistants.

An introduction to the study of protoplasm, of the cell and its activities, and of the structure, development, and biology of invertebrate animal types, together with a thorough study of a typical vertebrate (the frog). The course emphasizes training in observation and in the interpretation of zoological phenomena, with reference as far as possible to biological principles.

Prospective medical students who expect to elect organic chemistry in the second semester, simultaneously with biology, will avoid conflict by electing Zoology 1 in the first semester, and Botany 1 in the second semester.

1a. Principles of Animal Biology. Lectures, recitations, and laboratory. *Four hours.* Professor SHULL, and assistants.

This course is designed to introduce the student to the basic principles of biology. The elements of structure, physiology, classification, ecology, geographical distribution, paleontology, and evolution are studied at first hand. Animals are studied, not as representatives of certain groups, but only in so far as they furnish the basis for drawing conclusions regarding principles.

Students who have had training in Zoology in the better preparatory schools may advantageously elect this course instead of Course 1, but they must consult with the instructor before making such substitution.

3. Organic Evolution. *One hour.* Professor REIGHARD.

The illustrated lectures deal in a popular way with the evidences for evolution drawn from classification structure, development, paleontology, distribution, variation, and experiment, and under the head of factors, with such topics as natural selection, the inheritance of acquired characters, and the influence of environment. No prerequisite. Freshmen should not elect this course without special permission.

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* Introductory courses are those that do not require a prerequisite. Courses 1 and 1a are open to Freshmen, but Courses 3, 3a, and 24 must not be elected by Freshmen.

*II. Advanced Courses.**

8. Natural History of Animals with special reference to the principles of ecology and behavior. Lectures, laboratory, and field work. Professor REIGHARD.

Courses 8 and 8*a* form a year's work, the *purpose* of which is:—

(1.) To present in a systematic way those fields of natural history that have been organized into sciences. These fields are (a) the relations of animals to environment (animal ecology), and (b) animal behavior.

(2.) To acquaint students with the animals of the region—both invertebrate and vertebrate—in their natural surroundings. Only those invertebrates are considered that are of importance in presenting the facts and principles of ecology. The classification of vertebrates is studied in considerable detail. But little time is given to the classification of intertebrates. This subject is taken up in more detail in Courses 4 and 7.

(3.) To afford a training in the technique of the subject. Emphasis is laid on methods of field observation and on field notes. The notes are made the basis of written reports. Both field notes and reports are criticized and discussed with the purpose of developing scientific method in biology. Methods of collecting and preserving animals are taught.

The *field work* is carefully planned and regularly carried out after the manner of laboratory work. It includes on the side of ecology the recognition and description of the principal local habitats and of the more important members of their animal communities. The reactions of typical forms to environmental factors are experimentally tested as far as possible. On the side of behavior the field recognition and behavior of fishes, amphibia, reptiles, birds, and mammals are taken up in detail. The order of the field work is determined by the seasons. Aquatic habitats (fresh water biology) is the chief topic in the fall. The winter months are devoted largely to indoor work on vertebrates but include some field work. In the spring the field work is devoted to the behavior of vertebrates and to terrestial habitats. Saturday mornings are used for field work when conditions are such that it cannot be done on Tuesday or Thursday. Occasional all day Saturday excursions are made. *The half days on which this work is scheduled must be free from other work.*

The courses are of cultural value and are required of those who expect the departmental recommendation to teach zoology as a major subject in secondary schools. They are meant to be a second year course following Zoology 1 or 1*a*, and are a prerequisite for Course 25. Those who elect Course 8 should follow with Course 8*a*.

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* Advanced courses are those that require Course 1 or 1a in Zoology or its equivalent as prerequisites. Other prerequisites may be required in certain cases as announced in the description of the courses.

4. Invertebrate Zoology. The morphology, physiology, embryology, and classification of the invertebrates exclusive of the insects. Repetition of work given in Courses 1 and 8 is avoided. Lectures and laboratory. *Four hours.* Assistant Professor HEGNER.

The laboratory work consists of the dissection of one or more type forms of each of the groups studied, a comparison of forms related to the ones dissected, and studies of the embryology of favorable types.

9. Embryology of Vertebrates. *Five hours.* Professor GLASER.

A course on the descriptive embryology of vertebrates. The lectures are comparative; the laboratory work dealing largely with the organogeny of the chick is supplemented by the demonstration and study of other forms. Some attention is given to the simpler embryological laboratory methods. Zoology 1 or some other course, including the elements of vertebrate anatomy, histology, and physiology is prerequisite.

18. Laboratory Methods and Management. Lectures and laboratory. *Three hours.* Assistant Professor LA RUE.

The work of the department gives opportunity for a few students to become familiar with the details of conducting a laboratory. This work is divided up into a number of categories in each of which the student is given actual practice during a certain portion of the year. In this manner each student is trained in the collection of laboratory materials, the making of cultures, care of aquaria, care of laboratory rooms, glassware and instruments, in the making of reagents, macroscopic and microscopic preparations, charts, and lantern slides, and in laboratory teaching. Those who expect to become assistants in the department should elect this course. They are treated as voluntary assistants in Zoology and are expected to elect Course 18*a* in the second semester. Prospective teachers of zoology must take the course in order to receive the recommendation of the department.

20. Wild Animals: Their Conservation and Value to Man. *Two hours.* Assistant Professor HEGNER.

This course is intended for Forestry students, but may be elected by others by permission of the advisory committee of the department. It must be preceded by Zoology 1 or 1*a*.

The aim of the course is to acquaint the student with the present status of wild life in America, its relation to man, and the methods for its conservation. The birds, mammals, and fish receive particular attention, although certain animals belonging to other groups are considered.

10. General Physiology of Maintenance. *Two hours.* Professor GLASER.

An introduction to the modern methods and results of general physiology. The attempt is made to interpret the dynamic equilibrium of the living system from the standpoint of physical chemistry. The materials group themselves under two main divisions: Physical-Chemical Analysis and the Physiology of Maintenance proper. Under the former is included a comparison of living with lifeless systems; a discussion of the limitations of atomistic analysis in biology; elementary analysis; the localization of chemical substances and elements in the cell; the cell as an osmotic and colloidal system; and surface phenomena. The second heading includes an outline of general metabolism, and the dynamics of enzymotic processes, together with a general discussion of response to stimulation and its role in the preservation of dynamic equilibrium. This course, which can be elected with profit only by seniors or graduates adequately prepared in the fundamental sciences, should be followed by the laboratory Course 10*a* given in the second semester since the two constitute one course extending through the year.

19. Genetics. *Two hours.* Professor SHULL.

This course aims to give the present status of the principal phases of heredity and experimental evolution, and to point out the gaps in our knowledge where further investigation is needed. It is intended primarily for graduate students, but properly qualified undergraduates may be admitted. Graduate students desiring experience in the methods of genetics may elect Course 19*a* in the second semester.

11. Zoological Seminary. *Two hours.* Professor GLASER.

Open only to graduates and required of all candidates for the doctorate in Zoology.

Historical development of Zoology, including discussions of important personages, movements, writings, and ideas, past and present; the relations of the several zoological branches to one another and to other fields of endeavor, and especially the broader relations of the individual to his science. Under the latter heading such topics as the nature and functions of science, the place of biology in the curriculum, the question of nationalism and internationalism in science, the intellectual background of research, research vs. teaching, the aims and methods of the great societies, journals, and handbooks, and finally, the ethics of publication, will receive attention.

From time to time, specialists in other fields will be asked to assist. Inasmuch as the work will not be duplicated from year to year, students may re-elect with profit.

12. Literature of Zoology. *One hour.* Professor REIGHARD.

The instructors and advanced students form a Journal Club, which holds weekly meetings. Reports are made on research work done by members of the zoological staff, and on important current papers, and are followed by informal discussion. Although the meetings are open to all, the membership is restricted. The course should be elected only after consultation. Participation in the work of the Journal Club is required of all graduate students whose principal subject is Zoology and of all assistants in the department.

16. Classification and Natural History of Animals.

The course may be elected as 16*a, two hours;* 16*b, three hours,* 16*c, five hours, or,* 16*d, ten hours.* Permission must first be obtained from the advisory committee of the department.

The time and place of carrying on the work should be arranged in accordance with the group selected with one of the members of the staff named below:

The Fishes: Professor REIGHARD.
The Reptiles: Professor RUTHVEN.
The Thysanoptera: Professor SHULL.
The Insects: Assistant Professor HEGNER.
Animal Parasites: Assistant Professor LARUE.

The purpose of this course is to increase our knowledge of the fauna of the region and to give students an opportunity to become acquainted with the methods and aims of systematic work, and the natural history and classification of the forms in particular groups.

26. Advanced Zoological Studies.

This course is intended to introduce the student to the methods used by the investigator in zoology. The work is individual. To each student will be assigned a topic. He will be required to examine the original literature and in some cases to prepare specimens illustrating the topic. The results of his work must be embodied in a report. The course is required of those selecting zoology as a major subject for the master's degree, and may at the option of the zoological faculty be required of those selecting zoology as a major for the doctorate. Application should be made to the advisory committee of the department. The work may be pursued under the direction of any member of the zoological faculty. The course should be elected in the name of the person with whom the work is to be done, as 26*a, two hours;* 26*b, three hours;* 26*c, five hours;* or 26*d, ten hours.*

27. Cellular Biology. *Two, three,* or *five hours.* Assistant Professor HEGNER.

This course is limited to qualified graduate students and may be elected only by permission of the advisory committee of the department.

This course deals with the morphology of the cell, cell division, the origin and history of the germ cells, fertilization, and cell organization.

28. French Reading. *One hour.* Room 218, New Engineering Bldg. Assistant Professor LEE.

Classical biological treatises in French as well as important papers in the current literature will be selected. The purpose of the course is to cultivate facility in reading the literature of biology and to familiarize the student with the technical terms of the science. The course should be of value to students of zoology, botany, medicine, and related sciences.

30. Animal Parasites. *Two, three,* or *five hours.* Assistant Professor LARUE.

This course is limited to qualified graduate students and may be elected only by permission of the advisory committee of the department. This course will include a consideration of parasitism and its biological importance, the anatomy, life histories, taxonomy, and geographical distribution of animal parasites.

31. Investigations in the Behavior of Fishes and other Lower Vertebrates in their Natural Environment. This work may be elected as 31*a, two hours;* 31*b, three hours;* 31*c, five hours;* 31*d, ten hours.* Professor REIGHARD.

33. Investigations in Zoogeography. This work may be elected as 33*a, two hours;* 33*b, three hours;* 33*c, five hours;* 33*d, ten hours.* Professor RUTHVEN.

35. Investigations in the Physiology of Development. This work may be elected as 35*a, two hours;* 35*b, three hours;* 35*c, five hours;* 35*d, ten hours.* Professor GLASER.

37. Investigations in Genetics. This work may be elected as 37*a, two hours;* 37*b, three hours;* 37*c, five hours;* 37*d, ten hours.* Professor SHULL.

39. Investigations in Cytology. This work may be elected as 39*a, two hours;* 39*b, three hours;* 39*c, five hours;* 39*d, ten hours.* Assistant Professor HEGNER.

41. Investigations in Helminthology. This work may be elected as 41*a, two hours;* 41*b, three hours;* 41*c, five hours;* 41*d, ten hours.* Assistant Professor LARUE.

SECOND SEMESTER

*I. Introductory Courses.**

1. Elements of Animal Biology. Lectures, recitations, and laboratory. *Four hours.* Professor SCHULL, Assistant Professor LARUE, and assistants.

A repetition of Course 1 given in the first semester.

3*a*. Heredity. *Two hours.* Professor GLASER.

The lectures on Heredity attempt to give a popular exposition of investigations which since the year 1900 have revolutionized this field. The subjects dealt with are: The Physical Basis and the Laws of Reproduction; Mendel's Law together with its theoretical implications and practical applications; Inheritance of Physical and Mental Traits in Man; Current Misconceptions, Mistakes, and Superstitions; and the Modern Eugenics Movement. The course is intended to meet certain needs, common to all classes of students, but those specializing in the biological and social sciences in the widest sense, will find it important from their several professional standpoints.

24. Functions and Activities of Animals. *One hour.* Professor REIGHARD and Assistant Professor HEGNER.

This course is intended for those who wish to have a general knowledge of the life processes of animals and their activities in relation to their environment, but are unable to pursue the more technical courses in zoology. Lectures, illustrated with lantern slides, will be given upon such subjects as nutrition, respiration, excretion, locomotion, hibernation, and the relations of animals to their surroundings. The subject matter will be arranged so as to be intelligible to those who have had no preliminary training in zoology. All members of the zoological staff may take part in the lectures.

*II. Advanced Courses.**

8*a*. Vertebrate Zoology. Natural History of Animals with special reference to the principles of ecology and behavior. Lectures, laboratory, and field work. *Five hours.* Professor REIGHARD.

This course deals chiefly with the recognition and behavior of local vertebrates, but may include a general study of terrestrial habitats (ecology). See announcement of Course 8 in the first semester. The course should be preceded by Course 8, but *upon consultation,* exceptions may be made to this rule.

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* Introductory courses are those that do not require a prerequisite. Courses 1 and 1a are open to Freshmen but Courses 3, 3a, and 24 must not be elected by Freshmen.

* Advanced courses are those that require Courses 1 or 1a in Zoology or their equivalent as prerequisites. Other prerequisites may be required in certain cases as announced in the description of the courses.

Field or laboratory work is done on Saturday mornings when conditions are such that it can not be done on Tuesday or Thursday. Occasional all day Saturday excursions. The half days scheduled for field work must be entirely free from other course work.

[5. Mammalian Anatomy. Lectures, quizzes, and laboratory work. *Five hours.*

This course deals with the anatomy of a mammal, the cat, whose structure closely resembles that of man. The laboratory work is supplemented by lectures on the essential features of structure, development, and physiology. It is meant for those who plan to study medicine or who for other reasons wish some knowledge of human anatomy, but find it impossible to pursue human dissection. It is properly a culture course and of especial value to those who expect to teach physiology in secondary schools. This course is omitted in 1916-1917, but may be given in 1917-1918.]

5*a*. Comparative Anatomy and Physiology of Vertebrates. Lectures and laboratory. *Four hours.* Mr. OKKELBERG.

The lectures deal with the comparative anatomy, comparative Physiology, and evolution of the various vertebrate organs and systems of organs. The classification of vertebrates in relation to their evolution is also discussed. The lectures are supplemented by demonstrations. The laboratory work consists in dissection of vertebrate types including fish, amphibian, reptile, bird, and mammal. The course is of value to students of medicine and dentistry as well as to teachers and others. It may follow Zoology 1 or 1*a*.

6. Forest Entomology. Lectures, laboratory, and field work. *Three hours.* Assistant Professor HEGNER.

A course in the habits, life histories and structure of insects. The course is especially adapted to meet the needs of forestry students.

7. General Entomology. Lectures, laboratory, and field work. *Four hours.* Assistant Professor HEGNER.

This course deals with the habits, life histories, and structure of insects, with special reference to the biological and economic aspects of the subject.

18*a*. Laboratory Methods and Management. Lectures and laboratory. *Three hours.* Assistant Professor LARUE.

A continuation of Course 18, but emphasis will be placed on the methods of zoological microtechnic. Opportunity will be given for the gaining of a wide experience in the use of various fixing agents, methods of embedding and staining. This course is required of those who expect to become assistants in the department.

21. Fresh-Water Biology. Students who wish to do work in this subject should elect Course 8 in the first semester.

9*a*. Physiology of Development. *Two hours.* Professor GLASER.

This course deals with the analysis of developmental processes by experimental methods. The subjects considered are: the physics and chemistry of fertilization; the dynamics of cell division; cleavage patterns; the general energetics of embryo-genesis; the mechanism of growth and differentiation; the phenomena of equilibrium in growth and development; and the general theory of development in its relation to the problems of preformation epigenesis, and modern vitalism. Prerequisites: Courses 9, and adequate training in chemistry. Properly qualified students may elect laboratory work under 10*a*.

10*a*. Laboratory Course in General Physiology. *Two hours.* Professor GLASER.

This course should follow Course 10 given in the first semester, but in the case of properly qualified students may accompany the lectures in Course 9*a* given in the second semester. The student carries out a selected number of basic experiments in general physiology and familiarizes himself with some of the methods and leading principles applicable to the problems in the general fields of maintenance and development. An elastic schedule permitting six hours laboratory work per week on consecutive days whenever necessary, is essential.

19*a*. Methods of Genetics. *Two, three,* or *five hours.* Professor SHULL.

This course is limited to qualified graduate students and may be elected only by permission of the advisory committee of the department.

The course aims to acquaint the student with the tools of genetic research. The laboratory work includes experiments in heredity and sex determination, and exercises in biometric methods. The lectures and recitations are devoted largely to biometry and reviews of recent literature bearing on methods. This course must be preceded by Course 19, or an equivalent.

25. Zoögeography. Lectures and laboratory. *Three hours.* Professor RUTHVEN.

The course is a discussion of the distribution of animals, approached not from the standpoint of the present distribution of animal groups, but rather from the point of view of the factors involved in migration and ecesis. It deals with those relations existing between the animal forms concerned and the environment, that have an influence upon distribution, and upon this basis an attempt is made to interpret the present conditions.

The lectures discuss the general subject and are supplemented by field and laboratory work on the local fauna and museum material. The student thus becomes familiar with materials illustrative of the principles discussed in the lectures as well as with the methods of study. Prerequisite: Courses 8 and 8*a*.

11*a*. Zoological Seminary. *Two hours.* Continuation of Course 11. Professor GLASER.

13. Literature of Zoology. Continuation of Course 12. *One hour.* Professor REIGHARD.

Course 13 has the same restrictions as Course 12.

17. Classification and Natural History of Animals. Continuation of Course 16. The course may be elected as 17*a, two hours;* 17*b, three hours;* 17*c, five hours;* or 17*d, ten hours.* Application should be made to the advisory committee of the department.

The subjects and the teachers are the same as in Course 16.

26*a*. Advanced Zoological Studies. Identical with Course 26, which see. Application should be made to the advisory committee of the department.

29. German Reading. *One hour.* Assistant Professor LEE.

This course is of the same nature as Course 28 given the first semester.

32. Investigations in the Behavior of Fishes and other Lower Vertebrates in their Natural Environment. This work may be elected as 32*a, two hours;* 32*b, three hours;* 32*c, five hours;* 32*d, ten hours.* Professor REIGHARD.

34. Investigations in Zoogeography. This work may be elected as 34*a, two hours;* 34*b, three hours;* 34*c, five hours;* 34*d, ten hours.* Professor RUTHVEN.

36. Investigations in the Physiology of Development. This work may be elected as 36*a, two hours;* 36*b, three hours;* 36*c, five hours;* 36*d, ten hours.* Professor GLASER.

38. Investigations in Genetics. This work may be elected as 38*a, two hours;* 38*b, three hours;* 38*c, five hours;* 38*d, ten hours.* Professor SHULL.

40. Investigations in Cytology. This work may be elected as 40*a, two hours;* 40*b, three hours;* 40*c, five hours;* 40*d, ten hours.* Assistant Professor HEGNER.

42. Investigations in Helminthology. This work may be elected as 42*a, two hours;* 42*b, three hours;* 42*c, five hours;* 42*d, ten hours.* Assistant Professor LARUE.

BOTANY

The department of Botany occupies the south side of the new Natural Science building. The easiest approach from the interior of the Campus is by the easterly one of the two south entrances.

Rooms in the basement are numbered from 100 to 199 inclusive; on the second floor, from 200 to 299 inclusive; on the third floor, from 300 to 399; on the fourth floor, from 400 to 499.

Members of the Botanical staff may be consulted at the hours and rooms here designated:

Professor NEWCOMBE, *M* and *W*, 1 to 3, in Laboratory B 100; *M* and *W*, 4 to 4:30, in Office B 108.

Professor POLLOCK, *M*, 1 to 3, in Laboratory B 209; *M* and *W*, 3 to 3:30, in Office B 210.

Professor GLEASON, *W* and *T*, 10 to 10:30 in Office B 303.

Assistant Professor KAUFFMAN, *M* and *W*, 2 to 3, in Laboratory B 400; *T* and *Th*, 11 to 12, in Office B 403.

Assistant Professor BARTLETT, *Tu* and *Th*, 2 to 3, in Laboratory B 202; *Tu* and *Th*, 3 to 3:30, in Office B 118.

Dr. EHLERS, *M* and *W*, 2 to 3, in Laboratory B 309; *M* and *W*, 4 to 4:15, in Office B 310.

Dr. HOLMAN, *M*, *W*, *F*, 10 to 10:15, in Room 300.

Dr. POVAH, *M*, *W*, *F*, 3:15 to 3:30, in Room ——.

Consultation Hours.—Representatives of the Botanical Staff will be in Room B 209, 10 to 12 daily, throughout registration week, September 27 to October 4, for consultation with students.

First year electives: Courses 1, *1a*, *1p*, *2p*, 6, 8, 10, 11, 18.

Second year electives: Courses 3, 6, 7, 8, 13, 14, 16, 18, (conditional), 26.

Upper class electives: The courses with higher numbers than in the two foregoing classes require at least 2 years of college botany to precede. Other conditions will be found accompanying the individual courses.

Advice to students:

1. Students having done a year's high school work in botany may be admitted to Course *1a*, but should present their laboratory notebook for inspection by a member of the staff.
2. Those wishing to become acquainted with flowering plants in the field should take Course 8 after Course 1 or *1a*.
3. Those preparing for teaching in the secondary schools should take Courses 1, *1a*, 3, 6, 7, 8, 16 or 18, 23, 27, 30*a*. No one can be considered for recommendation for teaching with less than Courses 1, 7, and 8.

4. Those preparing for professional forestry are required to take Courses 1 or 1*a*, 13, 14, 17, 26, and are advised to take 22 and 25.

5. Those preparing for professional work in plant pathology should take Courses 1 or 1*a*, 6, 7, 8, 19 or 20, 19*a* or 20*a*, and some problem in pathological research.

6. Those preparing for college positions should take the courses enumerated in group 4, 5, and 6 above, and in addition a problem in the direction of the specialty chosen.

FIRST SEMESTER

1. Elements of Botany. Lectures, recitations, and laboratory. *Four hours.* Professor POLLOCK, Assistant Professor BARTLETT, Dr. HOLMAN, Dr. POVAH, and assistants.

A study will be made of the properties and activities of protoplasm, developmental history, evolution of structure and function, relation to environment, and the classification of forms into the groups which make up the plant kingdom. The course will begin with the lowest forms of life and proceed to the highest through the bacteria, algae, fungi, liverworts, mosses, ferns, gymnosperms and flowering plants. Several voluntary field excursions will be offered for the purpose of making acquaintance with trees, shrubs, and herbaceous plants.

This course is a prerequisite for all other laboratory courses in Botany except 1*a*. Course 1 is repeated and is open for general election the second semester. Students planning to take Botany 1, Zoology 1, and Organic Chemistry 10, all in one year, will find a conflict in lecture hours between the Zoology and Chemistry, and hence should take the Botany and Chemistry in the second semester.

1*a*. Elements of Cryptogamic Botany. Lectures, laboratory and quiz. *Four hours.* Assistant Professor KAUFFMAN.

This course is taken in place of Botany 1, by those who have had a year of standard high school botany or its equivalent.

1*p*. Elementary Structural Botany. Lectures and laboratory work. *Two hours.* Professor GLEASON.

This course is primarily for pharmacy students; literary students will be admitted by special permission only.

3. Microbiology of Soil, Air, Water, and Food. Lectures and laboratory. *Two hours.* Professor POLLOCK.

A study of some of the more common organisms in our immediate environment, their identification and their relation to human life and industrial process; air bacteria, soil fertility, the fermentation industries, food preparation and preservation.

The course must be preceded by Botany 1, or 1*a*.

7. General Morphology and Physiology. *Four hours.* Lectures and laboratory work. Professors NEWCOMBE and GLEASON.

During the first month, the student's time will be given to a field and laboratory study of the external morphology of flowering plants. The balance of the semester will be spent in a laboratory and greenhouse study of plant culture, nutrition, and reproduction, the student raising his own plants and making his own experiments.

This course, with Course 8 in the second semester, is planned as a year's work for second year students; and these two courses, with the first year's work, are intended to give a general survey of the science of general botany. These two courses are required to precede, except as specifically stated, all third and fourth year courses. Either Course 7 or Course 26 fulfills the requirements in plant physiology.

11. Biological Problems and Theories. *One hour.* Professor NEWCOMBE.

This course will present the status of such questions as the origin of life, development and growth, heredity, determination of sex, senility and death, origin of species, improvement of races, resistance to disease, and immunity. Open to all students without prerequisites.

13. Forest Botany. Lectures, field and laboratory work. *Four hours.* Dr. EHLERS.

This course must be preceded by Course 1, or 1*a*.

Students will be grouped in two sections, and each student will be expected to work two half-days, from 1 to 5, either *Tu, Th,* or *M, W.* Students must arrange their sections with the instructor before depositing their election blanks.

The work of this course will consist of the study of the external morphology, the identification and classification, and the biology of the trees, shrubs, and herbaceous plants of the forest societies. By the requirement of field notes, and laboratory notes and drawings, students will have practice in the methods of descriptive botany and dendrology.

While the course is designed for forestry students, others will be admitted by special permission.

✓ 17. Forest Mycology and Pathology. Lectures, quizzes, field, and laboratory. *Four hours.* Assistant Professor KAUFFMAN.

This course is primarily for students intending to study forestry. Special attention will be paid to these fungi causing diseases of trees and decay of wood.

19. Advanced Mycology and Pathology. Conferences, readings, field and laboratory work. *Three, five or eight hours.* Assistant Professor KAUFFMAN.

This course will give practice in the identification and classification of fungi, and the study of their literature. It will be especially useful for students who wish to prepare for positions in Experiment Stations or in the U. S. Government work. It must be preceded by Course 6, or its equivalent, and should be followed by Course 49 or 50.

19*a*. Seminary in Mycology. *One hour.* Assistant Professor KAUFFMAN.

Admission by permission of the instructor.

23. Ecology. *Three hours.* The lectures include a presentation of the general principles of the relation of plants to their environment and their grouping into associations In the laboratory the anatomical structure of certain typical ecological groups is studied. Professor GLEASON.

25. Phytogeography of North America. Lectures and assigned readings. *Two hours.* Professor GLEASON.

To be preceded or accompanied by Course 23.

Beginning with a description of the vegetation of Michigan and its geographical relations, this course will next proceed to a review of the floral formations of North America. This will be followed by a study of the historical development of the flora, the influence of the glacial periods, and the modern dynamic trends of vegetation.

27. Reproduction and Embryology of Flowering Plants. Lecture and laboratory. *Three hours.* Dr. HOLMAN.

This course treats of the morphology of the flower, of the development of the pollen and embryo sac, of fertilization and the development of the embryo. In the preparation of their own material, students obtain practice in technique.

This course should follow Course 16.

29. Botanical Reading in French. *One hour.* Assistant Professor LEE.

33. Current Literature of Botany. *One hour,* the 2d and 4th *Tu* of each month. Professor NEWCOMBE.

Course 33 constitutes a Journal Club in which important papers on Botany are reviewed and discussed by the instructors and advanced students. All students are admitted to the meetings, but only advanced students may elect the course.

41. Investigations in Physiology. This work may be elected as 41*a, three hours;* 41*b, five hours;* 41*c, eight hours;* 41*d, ten hours.* Professor NEWCOMBE.

43. Investigations in the Role of Fungi in Soil Fertility. This work may be elected as 43*a, three hours;* 43*b, five hours;* 43*c, eight hours;* 43*d, ten hours.* Professor POLLOCK.

45. Investigations in the Bacterial Diseases of Plants. This work may be elected as 45*a, three hours;* 45*b, five hours;* 45*c, eight hours;* 45*d, ten hours.* Professor POLLOCK.

47. Investigations in Ecology. This work may be elected as 47*a, three hours;* 47*b, five hours;* 47*c, eight hours;* 47*d, ten hours.* Professor GLEASON.

49. Investigations in Mycology and Pathology. This work may be elected as 49*a, three hours;* 49*b, five hours;* 49*c, eight hours;* 49*d, ten hours.* Assistant Professor KAUFFMAN.

51. Investigations in the Physiology of Reproduction in Algæ, Mosses, or Ferns. This work may be elected as 51*a, three hours;* 51*b, five hours;* 51*c, eight hours;* 51*d, ten hours.* Assistant Professor KAUFFMAN.

53. Investigations in Genetics or Biochemistry of Plants. This work may be elected as 53*a, three hours;* 53*b, five hours;* 53*c, eight hours;* 53*d, ten hours.* Assistant Professor BARTLETT.

SECOND SEMESTER

1. Elements of Botany. *Four hours.* Professor POLLOCK, Dr. HOLMAN, and Dr. POVAH.

This is a repetition of Course 1, first semester. See the announcement of that course for details.

1*a.* Elements of Cryptogamic Botany. Lectures, laboratory, and quiz. *Four hours.* Assistant Professor KAUFFMAN.

This course is taken in place of Botany 1 by those who have had a year of standard high school botany or its equivalent.

2*p.* The Microscopy of Foods, Drugs, and Spices. Lectures and laboratory. *Three hours.* Professor SCHLOTTERBECK, and assistants.

2*pa.* Advanced Microscopy of Foods, Drugs, and Spices. This course is intended for those fitting themselves to be food analysts. *Two or four hours.* Professor SCHLOTTERBECK and assistants.

6. Mycology and Pathology. Lectures, field and laboratory work. *Four hours.* Assistant Professor KAUFFMAN.

To be preceded or accompanied by Course 1 or 1*a*.

This course aims at a general introduction to the morphology, physiology, and classification of fungi, together with their artificial cultivation, and their relation to disease. It is adapted, as a preparation in general botany, for teachers of agriculture and for students in chemistry or medicine.

8. Morphology and Classification. Lectures, laboratory, and field work. *Four hours.* Professor GLEASON.

This course will attempt to acquaint the student with the internal morphology and with the classification of flowering plants. The anatomy of stems, roots, leaves, and flowers will be studied; cultivated flowers from the greenhouse, and the wild flowers of the spring flora will be identified and classified.

10. Tropical Food Plants and Food Products. Lectures and assigned readings. *One hour.* Professor GLEASON.

This non-technical course is open to all students without prerequisite. In it is presented general information of cultural value concerning the source, history, cultivation, preparation, and commercial importance of such well-known food plants as coffee, tea, spices, rice, sugar, dates, bananas, cocoanuts, pineapples, and others. The lectures are illustrated by lantern slides.

12. Microscopy of Potable and Polluted Waters. *Two hours.* Professor POLLOCK.

This course is primarily for students in sanitary engineering. It is intended to give a knowledge of the organisms frequently found in water supplies, giving them bad tastes or odors, as well as a knowledge of those organisms which are concerned in the purification of polluted waters or of sewage. Students will learn to recognize the commoner organisms concerned in these processes, and to understand how their biological activities are related to pollution and purification. *Two hours.* Professor POLLOCK.

14. Forest Botany. Continuation of Course 13. Lectures, field and laboratory work. *Four hours.* Dr. EHLERS.

In this course there will be two sections at the same hours as in Course 13. The first part of the semester will be spent in the study of the development, structure and function of the tissues of woody plants. The last part of the semester will resume the outdoor study of forest plants.

[16. Morphology, Physiology, and Classification of Liverworts, Mosses, and Ferns. Lectures, field, and laboratory work. *Three hours.* Assistant Professor KAUFFMAN.

Not open to those who have had *2a*. To be preceded or accompanied by Course 7 or 8. Given in alternate years.

Course 16 deals with the identification of the Archegoniates and the biological facts and theories which they illustrate. Omitted in 1916-1917.]

18. The Biology of the Fresh Water and Marine Algæ. Lectures, field, and laboratory. *Three hours.* Assistant Professor KAUFFMAN.

Not open to those who have had *1a*. To be preceded or accompanied by Course 7 or 8. Given in alternate years.

20. Advanced Mycology and Pathology. Conferences, readings, field and laboratory work. *Three, five, or eight hours.* Assistant Professor KAUFFMAN.

See Course 19, of which this may be made a continuation.

20a. Seminary in Mycology. *One hour.* Assistant Professor KAUFFMAN.

Admission only by permission of the instructor.

[22. Wood Technology. *Three or five hours.*

The anatomy, morphology and microtechnique of woody tissues. Practice in the killing, dehydrating, deaerating, imbedding, sectioning, staining, mounting, and photographing of woods, together with a study of their anatomy and evolutionary development in their bearings upon identification, classification, and economic values. Chiefly laboratory work. Mr. TUPPER. Omitted in 1916-1917.]

26. Experimental Physiology. *Four hours.* Professor NEWCOMBE.

A study of the relation of plants to their environment as manifested by the phenomena of nutrition, growth, and irritability.

To be preceded by one semester of college botany. Not open to students who have passed Course 7.

28. Botanical Readings in German. *One hour.* Assistant Professor LEE.

30a. Genetics. The course will consist of lectures, demonstrations, and reading. *Three hours.* Assistant Professor BARTLETT.

To be preceded or accompanied by Course 7 or 26.

30b. Genetics. Conferences, readings, field and laboratory work. *Three hours.* Assistant Professor BARTLETT.

This course must be preceded by Courses 1 or *1a*, 7 or 26, 8 and *30a* in Botany, and Course 1 in Zoology.

30*c*. Seminary in Genetics. *One hour.* Assistant Professor BARTLETT.
Admission only by permission of the instructor.

32. Biochemistry of Plants. *Three hours.* Assistant Professor BARTLETT.
A survey of the compounds elaborated by plants from the standpoint of plant physiology.

34. Current Literature of Botany. Continuation of Course 33. *One hour,* the 2d and 4th *Tu* of each month. Professor NEWCOMBE.

42. Investigations in Physiology. This work may be elected as 42*a, three hours;* 42*b, five hours;* 42*c, eight hours;* 42*d, ten hours.* Professor NEWCOMBE.

44. Investigations in the Role of Fungi in Soil Fertility. This work may be elected as 44*a, three hours;* 44*b, five hours;* 44*c, eight hours;* 44*d, ten hours.* Professor POLLOCK.

46. Investigations in the Bacterial Diseases of Plants This work may be elected as 46*a, three hours;* 46*b, five hours;* 46*c, eight hours;* 46*d, ten hours.* Professor POLLOCK.

48. Investigations in Ecology. This work may be elected as 48*a, three hours;* 48*b, five hours;* 48*c, eight hours;* 48*d, ten hours.* Professor GLEASON.

50. Investigations in Mycology and Pathology. This work may be elected as 50*a, three hours;* 50*b, five hours;* 50*c, eight hours;* 50*d, ten hours.* Assistant Professor KAUFFMAN.

52. Investigations in the Physiology of Reproduction in Algae, Mosses, or Ferns. This work may be elected as 52*a, three hours;* 52*b, five hours;* 52*c, eight hours;* 52*d, ten hours.* Assistant Professor KAUFFMAN.

54. Investigations in Genetics. This work may be elected as 54*a, three hours;* 54*b, five hours;* 54*c, eight hours;* 54*d, ten hours.* Assistant Professor BARTLETT.

LANDSCAPE DESIGN

Courses 1, 2, 3, 4, 5, 6, 8, are open to those students who have completed at least two years in the University, or can satisfy the instructors of their fitness to pursue the work. Courses 1 and 5 should be elected consecutively, as one year's work, but they may be elected independently or Course 5 may be elected first. Courses 7 to 12 are designing courses; each period implies three hours work; and when outside work is necessary, such as stadia surveying, ground measurement, and inspection, the entire morning or entire afternoon will be required, at the discretion of the instructor.

Those interested in landscape design are referred to the special announcement of the Curriculum in Landscape Design which may be obtained by application to the Secretary's office.

Students wishing to consult about these courses will find Professor TEALDI and Mr. WITTEMORE in Room 404 S. W., at the hours posted in the south corridor. Other hours by appointment. Professor TEALDI: Telephone, Univ. Ex. 152-M, or City Ex. 2430. Mr. WITTEMORE: Telephone, Univ. Ex. 152-J, or City Ex. 1493-R.

FIRST SEMESTER

1. Introduction to the Study of Landscape Design. Lectures, collateral reading, and reports. *Three hours.* Professor TEALDI and Mr. WHITTEMORE, with occasional lectures by Mr. SIMONDS.

Course 1 is designed to give a general knowledge of the variety of problems to be met with in the practice of landscape gardening. It is not intended as a technical course, such as a course in construction or design. The general problems are treated separately and special stress is laid upon the subject of good taste and common sense in all problems, from the simple arrangement of the city yard to the laying out of a country estate. During the first weeks of the semester one lecture may be omitted and a two-hour or three-hour period may be devoted to the actual study of local examples. The lectures are illustrated by the use of the stereopticon.

2. Garden Design and Landscape Gardening in England. Lectures and quizzes, with collateral reading and reports. *Three hours.* Professor TEALDI and Mr. WHITTEMORE.

The object of this course is to follow the gradual development of garden design in England from the earliest efforts to the present day, laying special stress upon the transition of styles and the development of the Naturalistic or English style. The lectures are illustrated by the use of the stereopticon.

3. Study of Materials for Planting Design: Trees and Shrubs. Lectures, reports, and field work. *Three hours.* Mr. WHITTEMORE.

Course 3 is intended to make the student familiar with the shrubs and trees generally used in landscape gardening. It is not intended as a course in botany; courses in botany and ecology are prerequisites to this course. The æsthetic values of plants are to be studied; their shape, size, habits, favorite habitat, their autumn coloring both of leaves and fruit, and their general aspects in autumn and winter. One field trip a week is taken, and a report of the trip is required. During the second part of the semester the field trip is omitted; the period is devoted to laboratory work when the entire afternoon may be required. The lectures are illustrated by the use of the stereopticon.

7. Design of Home Grounds. Study of local examples of private grounds. Solution of original problems. Drafting, conferences, and collateral reading. *Three hours.* Professor TEALDI and Mr. WHITTEMORE.

The work in Course 7 consists chiefly of the application to actual problems of the knowledge acquired in Courses 3, 4, and 6. The students are required to work out problems presented to them in definite form by the instructors, with the same attention to details which is necessary in actual office practice. The drafting consists of plans, profiles, colored sketches, and finished drawings.

9. City Planning I: Parks and Park Systems. *Four hours.*

Course 9 and 10 deal with the problem that is of such vital interest to all cities, especially those smaller towns which are growing very rapidly and have not yet lost the chance to make ample provision for the future. In the case of small towns the development of a park system is very often its town planning scheme so that these courses might be classified as courses in town planning in which the landscape designer's interest is preeminent. In Course 10 actual park layout is undertaken and special stress is laid on the importance of true landscape effects in which the native flora should be the main part of the landscape designer's material whether placed there by him or selected by him from what is there already. A park system is being developed around Ann Arbor, which from the topography of the area included in present and future development, presents most interesting and varied problems. Large areas of unbroken park land, connecting boulevards partly through the city but mostly through the rolling land to the south and north bank of the river,—all these features afford most complete material to the student of park construction, development and maintenance.

11. City Planning II: Design of Cemeteries. *Four hours.*

The landscape cemetery, the most American landscape creation, is a very different place from the cemetery of fifty years ago; it is the only kind laid out today and even the smallest town considers it as important as a park. This is peculiarly the landscape designer's field and presents a number of problems different from other undertakings. Lay-out, subdivision, planting, management, and maintenance, are considered in detail and a complete set of drawings of at least one problem is required.

SECOND SEMESTER

4. Study of Material for Planting Design: Trees, Shrubs, and Perennials. Lectures, planting plans, reports, and field work. *Three hours.* Mr. WHITTEMORE.

Course 4 is a continuation of Course 3. The trees and shrubs are studied chiefly in relation to their flowering and leafing characteristics and their ornamental values in spring and summer. Hardy herbaceous perennials are studied also along the same lines. Planting plans with estimate of cost are required from time to time. The lectures are illustrated by the use of the stereopticon.

Prerequisite, Landscape Design 3 and Courses in Botany.

5. Civic Improvement and City Planning. Professor TEALDI, and Mr. WHITTEMORE.

There is a growing tendency throughout the state to take up in earnest the different phases of civic improvement. As this subject grows to be recognized in the state of Michigan as it has been in other states, as a matter of vital importance not only to municipalities but to every individual whether in the country or in the city, there will arise a demand for men and women to lead the way of civic progress in their communities. These leaders will be recruited from teachers and other citizens who have devoted time to a study of this most complex question. Course 5 is offered with the express purpose of stimulating civic spirit and a desire for further investigation among those who would like to keep abreast of the movement for civic improvement and who are interested in its sane development. Among the subjects treated are the following: city lay-out, streets, bridges, squares, public buildings, parks, trees and other natural assets, city nuisances, problems of wires and advertisements as they affect the appearance of the city, dirt, smoke and noise as they affect life in the city. Special stress is laid upon the housing problem particularly as it is affected by the Garden City movement. The lectures are illustrated by the use of the stereopticon.

This course may be considered a practical introduction to City Planning. Many of the subjects dealt with are taken up separately and in detail in Courses 8 to 12 which see for descriptions.—*Three hours.*

6. Practice in Design. Study of local examples, sketch plans, reports. Solution of simple original problems based on topographical surveys. Field work, drafting, and conferences. *Three hours.* Mr. WHITTEMORE.

Course 6 is open only to those students who have passed satisfactorily in Courses 1, 3, and 4, or who can satisfy the instructor that they have done equivalent work.

8. Design of Large Country Places. *Four hours.*

Whereas Course 7 deals with home grounds proper whether in the city or in the country and therefore with moderate sized and small areas which offer the restricted problems common in cities and suburbs, Course 8 deals with larger problems in which the broad lay-out is the main feature. Actual surveys are used in this and the following courses as the basis of all problems.

10. City Planning II: Parks and Park Systems. Continuation of Course 9. *Four hours.*

12. City Planning IV: The City Plan. *Five hours.*

The subject of city planning which was entered upon in course 9 is here taken up with reference to the improvement of cities, the lay-out of subdivisions, and the general problems which are involved in a city plan. The garden city movement is studied in relation to conditions in this country. A special problem will be required of each student, this problem to be based on a section of Ann Arbor.

16. Advanced Garden Design. Lectures, drafting, collateral reading, and field reports. *Two hours.* Professor TEALDI.

Prerequisites, Landscape Design, 1, 2, 3, 4, 6, and 7.

Courses 7 and 16 are mainly designing courses, requiring outside reading and accompanied by occasional lectures throughout the semester. The problems are solved in such a way as would be expected in a landscape designer's office. Three hours of drawing are equal to one credit hour.

FORESTRY

Most of the courses in Forestry are intended primarily for the training of professional foresters but are open to all students of the University, who are properly prepared to take them and who obtain the permission of the professor in charge.

However, a certain number of courses are now offered by the Forestry department that are non-technical in character and are open to all students of the University *without special preparation.* The aim of these courses is to enable students in other departments to become informed with regard to certain fundamental phases of forestry work and forestry conditions in their relation to our national business and general welfare. These general courses are 2, 21, 22, 23, 24, and 24*a*.

All Forestry courses are given in the Natural Science building.

(For further information regarding Forestry courses, see the special Forestry Announcement.)

Consultation Hours.—Throughout registration week, September 27 to October 4, Professor ROTH or his representative, will be in Room F 214, N. S., 10-12 daily, to consult with students and advise them in their elections.

FIRST SEMESTER

3. Timber. Continuation of Course 4. Lectures and laboratory. *Two hours.* Prerequisites, Forestry 4. Assistant Professor YOUNG.

5. Silvics. Lectures and laboratory. *Four hours.* Professor SPONSLER.

   Life of the tree, its habits and behavior in the woods. Includes structure and functions of the roots, stem, leaves, and fruit, the effects of soil, climate, light, and other factors upon the tree and the forest in general and upon the important timber trees and forests in definite regions.

   Prerequisites, Botany 13 and 14 and Forestry 1.

7. Forest Mensuration. Lectures and laboratory. *Four hours.* Mr. POTTINGER.

   Timber estimating and scaling; methods of surveying and mapping of forest lands; methods used in forest investigations for measuring volumes of single trees and entire stands of timber; study of rate of growth of single trees and yield in volume of entire stand.

   Prerequisites, Surveying 12 and 13, Botany 13 and 14, Mathematics 1 and 2.

9. Silviculture. Lectures and laboratory. *Four hours.* Assistant Professor YOUNG and Mr. POTTINGER.

   Natural reproduction of the forest, of silvicultural systems of treatment. Methods used in care of the forest—improvement cuts, thinnings, underplanting, etc. Application of methods of rèproduction and care to conditions in United States and Canada. Timber marking.

   Prerequisites, Forestry 5 and 6. Geology 15 must precede or accompany this course.

11*a-d*. Special or advanced work in Forestry. This course may be selected only by special permission of the professor in charge. *Two, three or four hours.*

   This course is elected as:

11*a*. Management. Professor ROTH.

11*b*. Silvics and Dendrology. Professor SPONSLER.

11*c*. Silviculture. Assistant Professor YOUNG.

11*d*. Protection and Utilization. Assistant Professor LOVEJOY.

13. Forest Utilization. Lectures and field work. *Three hours.* Assistant Professor LOVEJOY.

Methods of realizing upon forest resources. Uses of timber, points of production and market. Methods of manufacture, costs and values. Minor forest products. Logging and sawmilling. Stumpage valuation. Timber sale contracts and sale administration. Miscellaneous forest uses.

Prerequisites, Surveying 12 and 13 and Forestry 1.

15. Forest Management. *Four hours.* Professor ROTH.

General forest surveys and preparation of working plans; administration and regulation of the field and office work in the care of a large tract of timber and the methods of calculation involved in judging the value of forests and forest operations.

Prerequisites, Forestry 7, 8, 9, 10, 13, and 14.

17. Dendrology. Lectures and laboratory. *Two hours.* Professor SPONSLER.

Important forest trees, classification, relation to economic phases and geographic features of the region; forest types.

Prerequisites, Botany 13 and 14; Forestry 1 and 6.

19. Forest Improvements. Lectures and field work. *Three hours.* Assistant Professor LOVEJOY.

Planning, locating, and constructing headquarters stations and buildings, forest roads, trails, telephone lines, lookout stations, camps, and other permanent improvements; locating and developing systems of improvements; costs of construction and maintenance. The course considers improvements for administration and protection rather than for logging or other exploitation.

Prerequisites, Forestry 7 and Surveying 12.

21. Conservation with Special Reference to the Forest Resources of the United States. *One hour.* Assistant Professor LOVEJOY.

Development of the Public Land Policy of the United States; characteristics and status of the natural resources; forest products and their relation to our industries; forest influences on climate and water supply; methods by which the forester handles timber properties.

The treatment of the subject in general and from the standpoint of public economy. Open to all students.

23. Forestry for Civil Engineers. *Two hours.* Assistant Professor YOUNG.

Economic importance of forestry. Relation of forests to precipitation and stream-flow with especial reference to power and storage reservoirs and irrigation projects. Methods of planting for watershed protection, for snowbreaks and windbreaks.

Identification, characteristics, methods of storage and seasoning of timbers used in construction. Grading rules and specification used in buying and selling timber. Wood preservation. Fire protection.

This course has no prerequisites and is open to all students.

SECOND SEMESTER

1. Introduction to Forestry. *Four hours.* Professor ROTH and Mr. POTTINGER.

A general presentation of the subject, its history, objects, methods, as well as its economic importance.

Prerequisites, Botany 13.

2. Woodlots and Forest Parks. Lectures and field work. *Two hours.* Professor SPONSLER.

Importance and care of woodlots, forest parks, plantations, street and shade trees.

Open to all students. No prerequisites.

4. Timber. Lectures and laboratory. *Two hours.* Assistant Professor YOUNG.

Structure and identification of woods used for timber. Study of mechanical properties (strength and resistance) by actual tests. Methods of seasoning and preservative treatment of woods.

Prerequisites, Physics 1, Botany 13 and 14.

8. Forest Mensuration. Continuation of Course 7. Lectures and field work. *Four hours.* Mr. POTTINGER.

Prerequisite, Forestry 7.

10. Silviculture. Lectures and field work. *Four hours.* Assistant Professor YOUNG and Mr. POTTINGER.

Artificial reproduction of the forest. Methods of direct seeding. Raising trees in the nursery. Methods of planting trees in the field. Actual practice in nursery and planting work.

12*a-d*. Special or Advanced Work in Forestry. This course may be elected only by special permission of the professor in charge. *Two, three, or four hours.*

This course is elected as:

12*a*. Management. Professor ROTH.

12*b*. Silvics and Dendrology. Professor SPONSLER.

12*c*. Silviculture and Timber. Assistant Professor YOUNG.

12*d*. Protection and Utilization. Assistant Professor LOVEJOY.

14. Forest Utilization. Continuation of Course 13. *Three hours.* Assistant Professor LOVEJOY.

Prerequisite, Forestry 13.

16. Forest Management. Continuation of Course 15. *Four hours.* Professor ROTH and Mr. POTTINGER.

Prerequisite, the same as for Forestry 15, and including Forestry 15.

18. National Forest Administration. *Two hours.* Assistant Professor LOVEJOY.

History of the public land policy of the United States. Public land laws and their administration. Land classification. Development of the National Forest policy. Organization and work of the U. S. Forest Service. Detail of National Forest Administration.

20. Forest Protection. *Three hours.* Assistant Professor LOVEJOY.

Enemies of the forest as they affect the work of the forester. Forest laws, trespass and trespass procedure. Occurrence, prevention and suppression of forest fires. Rating of protection costs to hazards and values. Planning and operating fire preventing and fire fighting systems. Preventive and protective measures in attack by insects and fungi. Meteorological and other damages.

Prerequisites, Forestry 4, 9, and 10, Botany 17, Zoology 6.

22. Conservation with Special Reference to the Forest Resources of the United States. *One hour.* Assistant Professor LOVEJOY.

(See No. 21 for first semester, for description of courses.)

The treatment of the subject in general and from the standpoint of public economy. Open to all students.

24. Forestry for Teachers. *Two hours.* Assistant Professor YOUNG.

The forester's work and problems he has to solve. Economic importance of forestry. History of forestry in the United States and abroad. Our timber resources and their distribution. Factors affecting tree-growth. Influences of forest upon climate, stream-flow, and erosion. How the forest is reproduced and cared for. Forestry literature.

Non-technical treatment of subject.

Open to all students. No prerequisites.

24*a*. Forestry for Teachers. *Two hours.* Assistant Professor YOUNG.

This course may be taken as a separate course or as supplementary to Course 24 by students who desire field and laboratory work in the identification of wood and of our common trees.

Open to all students.

COURSES IN OTHER SCHOOLS AND COLLEGES

OPEN, UNDER CERTAIN CONDITIONS, TO STUDENTS IN THE COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS

Certain courses, given in other Schools and Colleges of the University, may be elected by students in the College of Literature, Science, and the Arts. For the detailed description of such courses see the Announcements of those Schools and Colleges.

Students in this College may elect courses in other Schools and Colleges of the University only by special permission of the Dean of this College. Such permission is granted *pro forma* to students enrolled in programs (Business Administration, Forestry, etc.) whose curricula include courses outside the College. But students who relinquish such special programs forfeit the credit for extra-Departmental courses they may have taken.

Courses in the Medical School or the Law School thus taken, may not be counted towards the hours of Literary credit required for the Combined Curriculum.

The only courses which may be elected without the special permission of the Dean are the following:

DRAWING

FIRST SEMESTER

1. Geometrical Drawing. *Two, three or four hours.*

2. Free-Hand Drawing. *Two hours.* Miss HUNT.
Application of the laws of perspective, light and shade, in the free-hand representation of form, by the use of pen and pencil. A general preliminary course.
The section is limited to 30 students.

4. Descriptive Geometry I. Lectures and Drawing. *Two hours.*

4*a*. Descriptive Geometry and Shades and Shadows. *Three hours.*

5. Descriptive Geometry II. Lectures and Drawing. *Two hours.* Course 5 must be preceded by Course 4 of which it is the continuation.

5*a*. Perspective and Stereotomy. *Two hours.*

8. Water Color Drawing. Advanced Composition and Still Life. *Two hours.* Miss HUNT.
The section is limited in number.
Course 8 must be preceded by Courses 2, 3, and 7.

9. Historic Ornament and Applied Design. *Two hours.* Miss HUNT.

10. Free-Hand Lettering. *Two hours.* Mr. PALMER.

SECOND SEMESTER

1. Geometrical Drawing. *Two, three, or four hours.*

3. Free-Hand Drawing (Advanced). *Two hours.* Miss HUNT.
Work from casts and still life in black and white. Rendering with charcoal, brush, and pencil.
Course 3 must be preceded by Course 2 or an equivalent.

4. Descriptive Geometry I. Lectures and Drawing. *Two hours.*

4*a*. Descriptive Geometry and Shades and Shadows. *Three hours.*

5. Descriptive Geometry II. Lectures and Drawing. *Two hours.*
Course 5 must be preceded by Course 4 of which it is the continuation.

5*a*. Perspective and Stereotomy. *Two hours.*

7. Water-Color Drawing. Elementary drawing and coloring from copy. *Two hours.* Miss HUNT.
Course 7 must be preceded by Course 2.

9*a*. Historic Ornament and Applied Design. (Continued.) *Two hours.* Room 31. Miss HUNT.

10. Free-Hand Lettering. *Two hours.* Mr. PALMER.

ARCHITECTURE

FIRST SEMESTER

15. General Course in the History of Architecture. *Two hours.*
The aim of this course is to give students seeking a liberal culture a survey of the development of the art of building. The temples, cathedrals, palaces, and other characteristic monuments of the ancient, medieval, renaissance and modern styles, their design, sculpture, and painted decorations will be studied lateral reading. This course is open to all students in the University, but cannot be counted towards graduation in architecture.

HYGIENE

SECOND SEMESTER

1. General Hygiene. Lectures. *Three hours.* Professor VAUGHAN.

ROMAN LAW AND JURISPRUDENCE

The courses in Roman Law are closely associated with the work in Latin. Either of the courses may be taken with profit by the student of Latin who is also interested in history or law.

FIRST SEMESTER

1. Roman Private Law. The History and Fundamental Principles of Roman Private Law. *Two hours.* Professor DRAKE.

10. The Science of Jurisprudence. *Two hours.* Professor DRAKE. These hours are subject to change.

MEDICAL SCIENCES

Courses in Anatomy, Bacteriology, Hygiene, Physiological Chemistry, and Physiology may be elected by permission of Dean EFFINGER. They may not, however, be counted as part of the Literary credit on the Combined Curriculum. Information concerning these courses may be obtained from the Registrar. See also the chapter on the Medical School.

Colleges of Engineering and Architecture

Special Announcements giving further information in regard to these Colleges are published annually. For copies of these Announcements or for other information relating to the Colleges, address Dr. Louis A. Hopkins, Secretary, Ann Arbor, Mich.

In the legislative act under which the University was organized in 1837, provision was made for instruction in engineering and architecture. Work was not actually begun in engineering, however, until 1858, and the first degrees were conferred in 1860. The engineering courses were included in the curriculum of the College of Literature, Science, and the Arts, until the close of the collegiate year, 1894-1895. At that time the College (Department) of Engineering was established by the Board of Regents as a separate College of the University. Instruction in architecture was organized as a sub-department of the College of Engineering in 1906. In 1913 the College of Architecture was given control of its programs of study, and, in general, charged with the administration of its affairs.

The Colleges of Engineering and Architecture offer a group of four-year curricula leading to the bachelor's degree. The degree conferred upon completion of one of these curricula is Bachelor of Science in Engineering, or Bachelor of Science in Architecture. The requirements for these degrees will be found on pages 345 and 383.

The academic year extends from the Tuesday preceding the first Thursday in October to the last Thursday in June (October 2, 1917, to June 27, 1918). In addition to four academic years, attendance at a Summer Session of eight weeks, beginning the Monday after Commencement (July 2, to August 24, 1917), is required between the second and third years of residence for all students in the College of Engineering except those in Civil Engineering; and between the third and fourth years for students in Civil Engineering. In addition to four academic years of residence, students in the College of Architecture are required to work four months in an architect's office.

REQUIREMENTS FOR ADMISSION

The requirements for admission are at present the same for all students in Engineering and Architecture.

Applicants for admission must be at least sixteen years of age, and must present satisfactory evidence of good moral character. They must bring credentials from the preparatory school last attended.

Applicants may be admitted on diploma, by examination, or on credits from another college. Advanced credit is allowed for work done in other institutions, provided the applicant's record shows that such work is equivalent to some course or courses offered in the University of Michigan. Provision is also made for the admission of special students under certain conditions.

ADMISSION OF CANDIDATES FOR A DEGREE

Candidates for admission as regular undergraduate students must pass examinations in fifteen units as indicated below or must be recommended by an accredited preparatory school as graduates who have satisfactorily completed these requirements for admission. Students who otherwise meet the above requirements but are deficient in not more than one and one-half units, may be admitted conditionally, but must make up their deficiencies within one year. These requirements are stated in units, a unit being defined as a course covering an academic year that shall include in the aggregate not less than the equivalent of one hundred and twenty sixty-minute hours of classroom work. Two hours of laboratory, drawing, or shop work are counted as equivalent to one of recitation.

Prescribed Units for Admission

GROUP I. ABSOLUTE REQUIREMENTS—10 UNITS

English	3 units
Grammar, Composition, Classics, History of English Literature.	
Mathematics	3 units
Algebra, through quadratics. Geometry, Plane, Solid, Spherical.	
Physics	1 unit
History	1 unit
Greek, Latin, German, French, Spanish—One of these	2 units

GROUP II. ALTERNATIVE REQUIREMENTS—1½ OR 2 UNITS

Chemistry	1 unit
Trigonometry, Plane	½ unit
German or French	1 or 2 units
Greek or Latin	1 or 2 units
Manual Training	1 unit

GROUP III. OPTIONAL REQUIREMENTS—3½ OR 3 UNITS

The 3 or 3½ optional units may be presented in any subjects for which credit toward graduation is given by the accredited school and which are taught in a manner approved by the University; but no more than three of the fifteen units required for admission will be accepted in vocational subjects and no more than two units in any one of them. Students of Architecture should, if possible, offer one unit of free-hand drawing.

The Manual Training must be of such a character as to excuse the student from Shop 1 and 2 in the University. Students who present the full requirements for admission without Chemistry or Trigonometry, will take a two-hour course in Trigonometry and two four hour courses in Chemistry during their first year of residence, receiving credit for the same toward graduation.

All applicants must send prospectuses of the courses of study or letters from instructors describing the work done when credit is asked in the vocational subjects,—Manual Training, Drawing, Agriculture, and Commercial Branches. In general, the standards set up by the Commission on Accredited Schools and Colleges of the North Central Association of Colleges and Secondary Schools will be recognized in adjusting high school credits in vocational studies.

Chemistry and Plane Trigonometry are placed in an alternative group with German, French, Latin, Greek, and Manual Training, so that all high schools with three or more teachers may offer full preparation for the Colleges of Engineering and Architecture, even if they cannot teach Chemistry and Trigonometry. These courses are offered in the Summer Session to accommodate students who wish instruction in them before entering the Colleges.

Some modifications of the language requirements may be allowed in the case of students whose native tongue is other than English. These cases will be considered individually.

Under English is included Grammar, Composition, Reading of English Classics, and History of English Literature. The History of English Literature may form part of the work of either the third or fourth year. Four units in English should always be presented whenever it is possible to do so.

Language Requirement for Graduation

All regular students in the College of Engineering are required to complete the equivalent of Course 4 in French or German; in the College of Architecture they are required to complete the equivalent of Course 3 in French or German, as given in these Colleges. Course 2 in Spanish, when preceded by at least three years of Latin or Greek or Course 3 in Spanish when preceded by two years of Latin or Greek, will satisfy this modern language requirement. If the engineering student meets this requirement with less than sixteen hours of college credit, or the architectural student with less than twelve hours of college credit, he must substitute for the balance courses from the following list:—English, Foreign Languages, Oratory, History, Political Science, Political Economy, Sociology, Philosophy, Fine Arts, Music.

ADMISSION ON DIPLOMA

Students presenting graduation certificates from any of the schools officially approved by the Committee on Diploma Schools, are admitted without examination to the Colleges of Engineering and Architecture, if they are recommended by the principal of the school in the subjects required as units for admission. Students must have done their work in mathematics and physics recently enough to have these subjects thoroughly in mind if they are to enter and do the work required in either College. These studies may be reviewed in the Summer Session, July 2 to August 24, 1917. College credit may be given for studies presented in excess of fifteen units required for admission, if these studies are deemed equivalent to similar courses in the University. Such credit will be adjusted after consultation with the professor in charge of the department concerned.

The approved schools of the University of Michigan do not necessarily include all of those accredited to or affiliated with other universities or colleges.

Diplomas and seventy-two-count academic certificates issued by the Regents of the University of the State of New York are accepted by the Colleges of Engineering and Architecture in place of examinations in all the subjects required for entrance which are covered by such credentials. A statement from the teacher, giving in detail the work done and proficiency attained in these subjects, must be submitted by the holder of the credentials.

A student who has failed to secure a certificate of graduation and the principal's recommendation from an approved school will be required to pass the regular examinations for entrance in all subjects.

Students who desire to enter the College of Engineering should present their credentials at the office of the Assistant Dean, Room 255, Engineering Building, not later than September 24, 1917, if they intend to enter for the first semester, and not later than January 30, 1918, if they intend to enter for the second semester. Students who desire to enter the College of Architecture should present their credentials on or before these dates to the Professor of Architecture, Room 209 of the same building.

It is better to mail the credentials to the proper office as long before these dates as practicable. They will be examined, placed on file, and the applicant will be informed whether they satisfy the requirements or not. Certificates and diplomas from schools other than those officially approved by the University do not excuse an applicant from the admission examinations.

ADMISSION ON EXAMINATION

Examinations for admission are held in September and in February. These examinations are conducted by the College of Literature, Science, and the Arts, in accordance with the schedule on page 116. Applicants presenting themselves too late for the scheduled examinations are required to pay an examination fee of *five dollars.*

SCOPE OF THE PREPARATORY WORK

In English Language, English Literature, French, German, Greek, Latin, Physics, Chemistry, History, Physiography, Botany, and Zoology the amount and character of the work which will be accepted is identical with that described for the College of Literature, Science, and the Arts.

Mathematics.—The three and one-half units in mathematics include Algebra, Geometry, and Trigonometry, as follows:—*Algebra.*—Fundamental Rules, Fractions, Simple Equations, Involution and Evolution, the Theory of Exponents, and Quadratic Equations, as given in Beman and Smith's Elements of Algebra, or an equivalent in other authors. *Geometry.*—Plane, Solid, and Spherical Geometry as given in Beman and Smith's Plane and Solid Geometry, or an equivalent in other authors. *Trigonometry.*—Plane Trigonometry, as given in Hall and Frink's Trigonometry, or an equivalent in other authors.

N. B.—It is very desirable that high schools whose graduates are received on diploma arrange their courses so as to include a portion of both Algebra and Geometry in their last preparatory year. Students who do not come from diploma schools should take a similar review if they expect to succeed in the study of mathematics in the University.

Spanish.—In addition to covering thoroughly the subject of Spanish grammar as is presented in such a work as Wagner's Spanish Grammar, the student should have read considerable modern Spanish and be able to read at sight easy prose. The preparatory course should include daily practice in conversation.

Drawing.—Where the full two units are offered for admission the work may consist of free-hand drawing, mechanical drawing, and design, a combination of any two of these, or it may consist entirely of any one of the three. Each one-half unit offered must represent work extending through the equivalent of two forty five minute periods per day for one-half year.

The work to be covered in the first half unit allowed is stated below. To receive the additional one-half, one, or one and one-half units the work must be relatively more advanced and the student must present a separate outline of each course taken together with the drawings made.

1. *Free-Hand Drawing.*—The student should show that he can represent correctly in outline and in light and shade, geometric and simple natural or decorative form. Accuracy of proportion and perspective are essential. The pencil, charcoal, or brush may be used.

2. *Mechanical Drawing.*—This work should cover:

(a) Exercises giving evidence of skill in the use of instruments and knowledge of materials used. These should consist mainly of the accurate geometrical construction of the more important plane curves, with simple problems involving tangents and normals to the same.

(b) Graded exercises in the orthographic projections of simple geometrical forms and working drawings of some of the more elementary constructions in wood and metal, all fully dimensioned, and in which the conventional signs are properly used.

(c) Exercises in line shading, shade lining, and cross hatching, together with a reasonable skill in lettering.

3. *Design.*—In this work a student should demonstrate some knowledge of the principles of design and the ability to apply them. The exercises should consist of compositions of straight and free curved lines and simple shapes and their use in the design of simple objects, such as a book cover, etc. The exercises may be in black and white, various values, or in color, and may consist in part of objects in wood or metal, and the like.

Manual Training in Shop Work.—One unit, optionally prescribed. The work to be accepted for this unit must cover bench work in wood, wood turning, and simple pattern making; forging, chipping and filing; elementary machine shop work.

Two units. Allowed. In making up the two units allowed, not more than one unit will be accepted in wood work, wood turning, and pattern making; one unit in machine shop work; one-half unit in forge shop work; one-half unit in foundry.

Agriculture and Commercial Branches.—In general the requirement for a unit in Agriculture or in Commercial Branches involves the completion of a course taken at least five hours per week for one year and accepted for graduation in the high school. The extent and character of the work must be approved by the University Inspector.

CONDITIONAL ADMISSION

An applicant who is deficient in not more than one and one-half units, may, at the discretion of the Faculty, be admitted conditionally; but he must remove any condition thus incurred at one of the next two regular examinations for admission; no student who has an admission condition outstanding at the beginning of his second year of residence is allowed to enter his classes until such condition is removed, unless for valid reason an extension of time is granted for its removal.

ADMISSION ON CREDITS FROM ANOTHER COLLEGE

Applicants who have taken some portion of the studies required for admission in an approved school or college—not a high school—may receive credit for such work in place of taking examination in the same. The following documents must be presented:

a. An official copy of their credits showing the subjects studied in such school or college, the number of weeks devoted to each, the number of class periods per week, and the standard attained upon completing the same.

b. An official certificate of their regular admission to such school or college.

c. An official certificate of honorable dismissal from such school or college.

Applicants in Engineering should apply in person to the Assistant Dean, Room 255, Engineering building, and applicants in Architecture to the Professor of Architecture, Room 209, Engineering building, September 19 or 20, or January 30, or their documents may be sent on in advance at the earliest possible date.

ADMISSION TO ADVANCED STANDING

Bachelors of Arts or Science of this University (and graduates of other approved colleges) are admitted without examination to advanced standing as candidates for a degree in Engineering or Architecture.

They should present to the Assistant Dean or to the Professor of Architecture an official certificate of the date of their graduation—not their diploma—and an official copy of the record of the studies they have completed, showing the subjects studied, the number of weeks devoted to each, the number of class periods per week, and the grade attained.

Such students are excused from a considerable portion of the general requirements for graduation (see page 345). The remaining requirements can be completed in two years, if, as an undergraduate, the student has taken the Mathematics and Physics prescribed for Engineering students (see page 345), and Courses 4 and 5 in Drawing (see page 361). A knowledge of differential and integral calculus, analytical mechanics, elementary drawing and descriptive geometry is required for the advanced work.

The culture imparted by classical or other liberal subjects will be found to have its uses for one engaged in technical work and a thorough study of the pure sciences will prepare engineering students for their work in applied sciences. All the time the student can devote to general studies before taking up specialities will be well spent.

Students who have completed at least one year's work in an approved college, and who bring explicit and official certificates describing their course of study and scholarship, and testifying to their good character, are admitted to advanced standing without examination except such as may be necessary to determine what credit they are to receive for work done in the college from which they have come.

Such applicants should present a letter of honorable dismissal from college; an official copy of their college record; and an official record of their high school, or other work, preparatory for college, the same as those admitted on diploma.

Students who have not completed a year's college work in an approved college, but before entering these Colleges of the University have pursued studies beyond those required for admission, may be admitted to advanced standing on passing the regular entrance examinations, and examinations in such undergraduate studies as they may ask to be credited with in advance.

Work in Manual Training and Drawing, pursued in a high school, is recognized for advanced credit if considered by the instructors in the Colleges of Engineering or Architecture equivalent to the work given in this University. Students desiring advanced standing in Drawing must bring all drawings completed previous to entrance.

Advanced credits must be secured before the student is classified and the record at once placed on file in the Secretary's office. An account once closed cannot be reopened without special permission from the Assistant Dean or the Professor of Architecture.

ADMISSION OF STUDENTS NOT CANDIDATES FOR A DEGREE

Students who are pursuing work in these Colleges and are not candidates for a degree, are designated Special Students.

Students over twenty-one years of age who wish to pursue particular studies in either College and who show by examinations or by the presentation of satisfactory certificates that they are prepared to do good work in the selected courses, may be admitted as special students on the recommendation of the heads of the departments of instruction in which they wish to study. The object of this rule is to enable young men who are beyond the high school age to secure technical training along special lines when they are properly prepared for the work. Two or more years of successful experience as teacher, draftsman, surveyor, engineer, or operative in engineering works, will be given considerable weight in determining the fitness of the candidate. In general, a good working knowledge of English, algebra, and geometry is required in order to succeed in engineering studies. Applicants for admission as special students should send as early as possible to the head of the department concerned letters of recommendation, certificates of scholarship and an exact statement of the courses desired.

A two-year course is provided for special students in Architecture. Such students must be qualified for the courses they wish to pursue and must have the approval of the head of the College of Architecture. They must be twenty-one years of age, must have had two or more years of experience in architects' offices, and must have a practical knowledge of architectural drawing. Special students who wish to pursue courses in advanced building construction must present the regular entrance requirements in mathematics.

Special students pay the same fees as regular students. Their work is assigned and regulated by the heads of the departments of instruction in which they register.

A special student may become a candidate for a degree by fulfilling the regular requirements for admission.

A student who is a candidate for a degree cannot become a special student without the permission of the faculty concerned.

DIRECTIONS

Applicants for admission on examination should present their credentials to the Assistant Dean of the College of Engineering, Room 255, in the Engineering building or to the Professor of Architecture, Room 209, Engineering building, on Monday, September 24, between the hours of 9 and 5, and receive from him papers admitting to the examinations. The result of the examination may be learned at the office of the appropriate officer, Monday, October 1.

Applicants for admission on diploma should present their recommendation blanks to the Assistant Dean or the Professor of Architecture not later than October 1, 1917.

When admitted, each student will be furnished with directions for subsequent procedure.

WITHDRAWAL FROM THE COLLEGES

Before withdrawal from class work, even temporarily, students should report to the Assistant Dean or the Professor of Architecture.

Honorable Dismissal will be granted by the Assistant Dean or the Professor of Architecture to students whose records are clear.

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

For the rules governing participation in public activities see Catalogue, page 86.

SOCIETIES

Several organizations of students are maintained, aside from the usual literary societies, for the reading of papers and holding discussions in various scientific lines.

The Engineering Society, composed of and officered by students of this College, holds meetings, at which papers of technical interest are read, and reports made upon observations and experiments. A reading room is maintained by the society, accessible to all students of the College. Many engineers of prominence have spoken before the society in past years.

The Architectural Society holds meetings from time to time for hearing addresses by visiting or local speakers, and conducts a number of social functions.

GRADUATE COURSES

The administration of courses for graduates is in the hands of the Graduate School, under which heading their description will be found. It should be emphasized here, however, that the world is constantly setting higher standards for engineers and architects, and that it is already distinctly advantageous for all students to lay a broad foundation of general courses during their four years of undergraduate work and reserve specialization for a fifth year. The group system of electives described below allows the proper freedom of election on the part of those planning to return for graduate work.

The following degrees are conferred: Master of Science in Engineering or Architecture, Civil Engineer, Mechanical Engineer, Electrical Engineer, Chemical Engineer, Marine Engineer, Naval Architect, and Architect.

For details, see the chapter on the Graduate School or write to Dean ALFRED H. LLOYD, for the special announcement of that School.

COURSES OF INSTRUCTION

The courses of instruction are subject to change from time to time; those announced for the year 1916-1917 and required for graduation, as stated on pages 345 and 383, together with some advanced, elective, and technical courses, are described on the following pages.

The courses given in the College of Literature, Science, and the Arts, and described on pages 150 to 314, are all open as electives to Engineering and Architectural students who are qualified to pursue them with advantage. Students desiring to elect such courses must receive permission from the Dean of that College and from the Committee on Classification of the College of Engineering, or from the Professor of Architecture.

A student enrolled in the College of Literature, Science, and the Arts, who desires to elect any of the work in the Colleges of Engineering and Architecture not included in the courses offered in the former College, must obtain written permission from the Dean of that College, and attach it to his election slip.

FEES AND EXPENSES

The Matriculation Fee and the Annual Fee must be paid in advance. For the rules governing Second Semester fees and the refund of fees see page 101.

Matriculation Fee.—For Michigan students, *ten dollars;* for all others, *twenty-five dollars.*

Annual Fee.—For Michigan students, *fifty-seven dollars.* For students not residents of Michigan, *eighty-seven dollars.* The annual fee required of all graduates who are granted the privilege of pursuing studies for an advanced degree *in absentia* is *ten dollars.*

Graduation Fee.—The fee for graduation is *ten dollars,* and the by-laws of the Board of Regents prescribe that no person shall be recommended for a degree until he has paid all dues, including the Graduation Fee. This fee will be received by the Treasurer of the University upon the presentation of a ticket to be secured at the office of the Secretary of the College in which the candidate is enrolled. To receive a degree at Commencement the candidate must be present in person and must have paid the graduation fee at least twenty-five days prior to Commencement Day. Others who have satisfied all the requirements for graduation, including the payment of the graduation fee, will receive their degrees at a subsequent meeting of the Board of Regents.

Laboratory Fees.—The required Laboratory courses cost approximately as follows: *Shop Practice.*—In the mechanical engineering course, *thirty dollars;* in the electrical engineering course, *twenty dollars;* in the civil, chemical, marine, and architectural engineering courses, *ten dollars. Physical Laboratory.*—A charge of *one dollar* is made for a course requiring one exercise a week during one semester, and at the same rate for the longer courses. *Mechanical Laboratory.*—The charge for each course is *five dollars. Chemical Laboratory.*—Students who take laboratory courses in chemistry are required to pay for the materials and apparatus consumed by them. The average cost is about *ten dollars. Camp Fee.*—A fee of *ten* *dollars,* in addition to the regular tuition for the Summer Session, is required of students who take Course 3 in Surveying.

The fee required for any course must be paid before the work of the course is begun.

Total Fees.—The total amount of fees paid to the University during the whole four years' course for matriculation, incidental expenses, materials used, and graduation, is, for Michigan students, from $265 to $360; and for others, from $350 to $445, varying more or less according to the student's actual laboratory expenses.

Other Expenses.—There are no dormitories for men, and no commons connected with the University. Students obtain board and lodging in private families. Room rent varies from one and a half dollars to three dollars and a half a week for each student. Board varies from four to five dollars a week.

Annual Expenses.—The annual expenses of students, including clothing and incidentals, are, *on the average,* about four hundred and fifty dollars. By the practice of strict economy, it is possible to complete the four-year course for fifteen hundred dollars, and even less. Many students are enabled to complete their course by withdrawing for a year or two to earn money to carry them through the remaining years.

A set of drawing instruments costs about $20.00, and if well selected will be serviceable for a long time.

For additional information in regard to expenses see page 99.

COLLEGE OF ENGINEERING

FACILITIES FOR INSTRUCTION

The chief requirement for a successful school of engineering is recognized to be a teaching staff organized by the selection of men who have not only had a thorough technical training but who have engaged for a considerable period in the practice of the particular branch of engineering which they teach. A large number of men have accordingly been selected, who have been engaged in practice for many years.

The work of instruction offered by these men is supplemented by illustrative material of various kinds. Large collections of photographs, drawings, working drawings, blue prints, models, working models, and full sized machines have been made and are freely used. These collections are being added to largely from year to year by gift and purchase, and are invaluable to the student.

The College occupies seven buildings on the campus, and a portion of the New Chemistry building is given over to the work in Chemical Engineering. The Engineering building occupies a ground space equivalent to 60 ft. by 650 ft., and is a fireproof structure four stories high. The Old Engineering building is used by the college for the work in English and Modern Languages. The shops occupy the old mechanical laboratory building and the surveying department is temporarily housed in the frame buildings adjoining the Engineering building.

PHYSICAL LABORATORY

For description of Physical Laboratory see page 60.

CHEMICAL LABORATORY

For description of Chemical Laboratory see page 61.

ASTRONOMICAL OBSERVATORY

For description of Astronomical Observatory see page 53.

ENGINEERING SHOPS

The engineering shops are in a group of connected buildings, and occupy about 30,000 square feet of floor space. Electric power is used throughout.

The *Wood and Pattern Shop,* 40 by 127 feet, is equipped with the tools and machinery usually found in a first-class establishment.

One end of the shop contains work-benches and tools needed for hand work in wood. The other end contains benches and tools specially adapted for pattern making. The central portion is occupied by a good variety of wood-working machinery. A lumber and pattern loft, 40 by 120 feet, contains blue-printing apparatus, materials, and a large collection of patterns.

The *Foundry,* 30 by 120 feet, is equipped with cupola and brass furnaces, core-ovens, elevator, crane, blowers, molding machines, and a supply of small tools and flasks suitable for the kinds of work done. Castings are made weekly aggregating 40 to 50 tons a year.

The *Forge Shop,* 40 by 127 feet, contains twenty-eight down-draft forges together with anvils and tools for doing a variety of work in hand forging; benches, vises and tools for chipping and filing metals; a power hammer and machines for punching, shearing, drilling, turning and planting operations as well as gas and oil fired furnaces, fitted with pyrometers, and instruments for testing hardness of tempered steels. Blast is supplied to the fires and gases removed by large power-driven fans, which thoroughly ventilate and purify the atmosphere of the room.

The *Machine Shop,* 40 by 127 feet, contains an assortment of engine lathes, speed-lathes, turret-lathes, planers, shapers, milling machines, grinding machines, and various tools for working in metal. A well-equipped tool room is connected with this shop.

In connection with each of these four shops there is a recitation room, in which are collected models, drawings, charts, diagrams, and books, which are used in the courses of instruction.

The central portion of the building 32 by 54 feet contains lockers and lavatories in the basement, offices and instrument shop on the first floor and a drafting room on the second floor.

The instrument shop is provided with machinery and tools for making apparatus and instruments for the laboratories of the University.

The drafting room is fitted with equipment suitable for workshop drafting and design.

A good part of the equipment has been designed and built in the shops. New machinery is added from time to time by construction or purchase. The entire equipment is used in instructing engineering and other students in the use of tools for working in wood and in metals, and in modern workshop methods. Opportunity is afforded to become familiar with the more common materials and form of construction used in engineering structures, buildings, and machinery. In all work an effort is made to follow the practice of the best shops.

THE BOGARDUS ENGINEERING CAMP

Through the generosity of Colonel Charles Bogardus and his wife, Hanna W. Bogardus, and by subsequent purchase, the University has acquired a tract of land embracing about 3,000 acres, lying on the south shore of Douglas Lake, Cheboygan County, Michigan.

These lands, known as the Bogardus Trace, have a frontage of about three miles on Douglas Lake. The Surveying Camp (Camp Davis) is located on the southern and eastern shore of Douglas Lake, or on the southern shore of South Fishtail Bay. The University lands extend from Douglas Lake to Burt Lake, one and three-quarters miles to the south. The frontage on the latter lake is considerably over one mile. Burt Lake has an elevation of 118 feet less than that of Douglas Lake. The lands bordering Burt Lake contain many springs, some of which unite to form a small stream known as Carp Creek. The summer work in surveying was conducted at this site for the first time during July and August of 1909. The camp grounds and the lands generally have improved each year. Each class has left some monument of its activity within the limits of the camp proper. To date the students have built or aided in the construction of the following improvements: A harbor for boats; two concrete buildings, each fifteen by thirty feet in plan; a water system, including wells, a reservoir and distributing system; a concrete platform, twenty by thirty feet, for adjusting instruments and for similar exercises; thirteen steel buildings to replace tents; two piers for sextant work; a gravel road through the camp; walks and stairways; triangulation stations and concrete piers for indicating the location of a camp meridian and for determining the center of the camp,—the main street being laid out on the arc of a circle. During the summer of 1915 a number of students from the University were employed to install a complete sanitary system, including standard fixtures, a sewer and a septic tank. At the same time a new kitchen with a basement twenty-eight feet square, was completed. During the summer of 1916, seventeen steel residence buildings were erected. While the prescribed work in surveying (page 363), occupies much of the time of the students, yet they have opportunities to take part in many activities which are valuable in themselves. The students manage the camp mess; they publish a camp paper; they enforce sanitary regulations; they organize parties for participation in construction work; they aid in entertaining visitors and participate in athletic activities. By thorough organization in every department all become quickly acquainted with the duties that must be performed. The resulting spirit of kindly cooperation and loyalty cannot be exceeded anywhere.

MECHANICAL ENGINEERING LABORATORY

The Mechanical Engineering laboratory is located in the Engineering building and occupies a total floor space of some 13,000 sq. ft. The laboratory as a whole comprises all the equipment utilized for illustration of the theory involved in Mechanical Engineering work and for both standard and research experimental work. Separate laboratory instruction is given along the lines of Hydraulic machinery and Automobiles and those parts of the equipment applying especially to these divisions are segregated to form the Hydraulic laboratory and the Automobile laboratory of which special mention is made below.

The equipment of the general Mechanical Engineering laboratory consists of steam power machinery and apparatus; internal combustion engines and a gas producer; air compressors; refrigeration machinery; and heating and ventilating apparatus; as well as the auxiliary apparatus for use in testing the various machines. Among the most interesting of the machines may be mentioned a 25 KW Curtis steam turbine; a 20 KW DeLaval steam turbine; several steam engines varying from 10 to 150 H. P.; a 40 H. P. Stirling boiler; two high-pressure air compressors delivering air at 2,600 pounds per sq. in.; a 13-ton ice-making plant complete in every respect; a Sirocco fan of latest type; and a complete experimental fan-heating system. In addition to the laboratory equipment, the University heating and lighting plant is available for experimental work as are also the plants of the city water company.

Besides the larger machinery the laboratory is equipped with all the necessary and desirable instruments used in testing, such as engine indicators, indicating and recording gages, thermometers, pyrometers, flow meters, weighing apparatus, etc. The instrument room also contains the standards of calibrating and correcting the various instruments. The laboratory is further equipped with apparatus for use in fuel calorimetry and analysis, and oil testing, suitable to the needs of the mechanical engineer.

While by far the greatest part of the equipment of the laboratory is devoted to the standard tests required in the regular work, there is nevertheless a large amount of special apparatus developed for the solution of specific problems.

Hydraulic Laboratory.—This laboratory occupies a space of 40 x 60 ft. on two floors. A canal 4 ft. wide and 14 ft. 6 in. deep conveys water from the naval tank to a well which furnishes the suction supply for the pumps. A 15-inch centrifugal pump geared to a 150 H. P. variable speed motor returns the water through two weighing tanks, each holding 600 cu. ft., to the naval tank. The canal is provided with bulk heads, screens, wiers, and nozzles arranged for various kinds of tests. The naval tank itself is arranged with bulk heads dividing it into basins each 100 feet long, and by means of a sluice in the bottom, connecting with the canal, various arrangements for pumping can be made. Other pieces of apparatus of special interest are a one million gallon duplex pump, a tangential water wheel direct connected to a 100 KW Fairbanks-Morse alternator with excitor and switchboard, a large Francis water wheel, and a number of smaller pumps and water wheels.

Besides the above equipment, the two Rees Roturbo pumps of the University fire protection system are installed in the Hydraulic laboratory, each pump being driven by a 150 H. P. variable speed induction motor. These pumps are arranged for use in experimental work.

Automobile Laboratory.—The Automobile laboratory contains four and six cylinder automobile motors, a self-starting system, a complete four-cylinder cut-out chassis, with demonstrating racks of carburetors, magnetos, clutches, transmissions, differentials, pleasure car and truck axles. Prony brakes, water brakes, and a complete Diehl electric cradle dynamometer rated at 60 H. P. for speeds up to 2,400 R. P. M., are available for determining power output. These, in connection with fuel measuring devices, pyrometers, cooling water regulating apparatus, compression gages, and a Hospitalier-Carpenter optical manograph, make the laboratory equipment complete for standard tests and advanced research work on automobile motors and chassis.

PHYSICAL TESTING LABORATORY

The Physical Testing Laboratory occupies two adjoining rooms, 29 x 54 feet and 27 x 54 feet respectively, on the ground floor of the south wing of the Engineering building and is equipped with apparatus especially designed for testing the strength of materials used in engineering work. This equipment includes a 100,000 pound Olsen testing machine and one of 200,000 pounds capacity built by Riehlé Brothers. Both these machines are adapted to tensile, compressive, and transverse tests, and are run by direct-connected electric motors. An Olsen torsion machine of 240,000 inch-pounds capacity, also equipped with direct-connected motor, is used, in determining the torsional strength of shafts and axles. Impact tests are made on an Olsen machine and endurance tests on an Upton Lewis Toughness machine. The cement testing laboratory is equipped for making the ordinary tests of cement and concrete. In addition to scales, sieves, briquet molds and accessories, there are two briquet testing machines made by Olsen, and a uniform-load beam-testing machine, especially designed for the University of Michigan, with a capacity of 85 tons, and adapted to beams of reinforced concrete, wood, or steel of any span up to 12 feet.

HIGHWAY LABORATORY

The Highway Laboratory is located in the north half of the old campus power house occupying approximately 6,000 square feet. There are five laboratory rooms besides computing room, instrument room, and offices. The equipment throughout is modern and up-to-date. There is a completely equipped cement testing laboratory, equipment for study of soils, standard rattler for testing paving brick, Deval rattler for testing rock, stone crusher, ball mill, diamond drills, diamond saws, and machines for testing hardness, toughness, specific gravity of rocks and gravels.

The Chemical Engineering department has one room equipped for the testing of bituminous materials. A large machine with capacity of 300 tons for testing beams, columns, bridge floors, and other full sized bridge members has been installed. A paving determinator for the wearing out of paving sections and the study of the durability of materials and the desirability of methods of construction offers excellent opportunity for research work. The minor equipment of these laboratories is fully adequate.

The Highway Laboratory has been placed at the service of the people of the State of Michigan by the Board of Regents, and tests of brick, stone, gravel, asphalt, road oils, and other paving materials will be made without any charge for cities or villages or for any county or township highway officials. The laboratory is being operated in direct cooperation with the State Highway Department.

HYDRAULIC TESTING FLUME

During the current year one of the most completely equipped testing flumes for research work in hydraulics, has been completed at the Argo Dam on the Huron River in Ann Arbor. This is the gift of Mr. Alex Dow of Detroit. Its construction greatly extends the scope of work in river hydraulics and in the study of flow and measurement of large volumes of water.

SANITARY EXPERIMENT STATION

The Sanitary Experiment Station comprises two small buildings together with a number of minor structures, and is located on the University grounds near Fuller Street, where the slope of the surface permits of the compact and efficient arrangement of the plant. The purpose of the Station is to provide facilities for the study of various problems related to public sanitation, and particularly to afford opportunities for investigational work in water purification, sewage disposal, the prevention of stream pollution, and other fields of sanitary engineering.

For work along the lines of sewage disposal and the protection of streams from pollution, the Station plant includes a large experimental septic tank unit, an Imhoff tank, four units of primary and two units of secondary contact filters, four slate filters, two sand filters, a six-compartment trickling filter, several settling tanks, apparatus for the sterilization of effluents by means of hydrochlorite, complete equipment for the study of activated sludge, and other minor and supplementary equipment. All the filters are set out in the open, for the purpose of studying the effect of severe winter weather upon their operation, but the tanks and controlling apparatus and other minor equipment are housed in the main Station building.

ELECTRICAL ENGINEERING LABORATORIES

The laboratories comprise one very large main dynamo room, six interconnected rooms for the telephone, telegraph, and wireless department, four rooms for photometric work, and one room each for storage battery, instrument calibration, research work, electrical museum, oscillograph work and dark room, instrument room and laboratory repair shop.

The *Continuous Current and Alternating Current Laboratory* is thoroughly equipped with units typical of all the standard types of electrical machinery and of many of the more important special types. Liberal equipment of apparatus and instruments enables the average squad to consist of four men, giving special opportunity for individual instruction and for independence in the work with development of initiative by each man in the squad.

The *Photometric Laboratory* is provided with standard photometers, photometer bars, standard lamps, etc., the equipment for testing arc lamps and for the investigation of illumination of buildings and streets being particularly complete.

The *Telephone and Telegraph Laboratories* are well equipped for the study of telephone and telegraph apparatus of both commercial and experimental types. The auxiliary apparatus includes ammeters, voltmeters, electrodynamometers, artificial telephone cables, condensers, etc., and is being added to each year. The laboratories are well supplied with commercial apparatus from the principal telephone companies. The wireless telegraph equipment is able to reach the Atlantic coast or even ships at sea and the laboratory is a wireless telegraph station with an operator licensed by the United States Government. There are excellent facilities for experimenting in wireless work. The Michigan State Telephone Co. operates an exchange for the University in an adjoining room and this is available for demonstration purposes.

The *Museum* contains several dynamos of historic interest, including an early generator by Ladd of London and two by Dr. J. W. Langley, formerly of this University, collections of insulators, cables, and other articles of interest or value for instruction to students in electrical engineering.

The University Power Houses and the electrically driven fire pumps, while not part of the electrical laboratory, as well as the hydro electric power house and distributing stations of the Eastern Michigan Edison Co. at and near Ann Arbor, on the Huron River, are valuable adjuncts for instruction purposes.

The University is well situated for excursions to Detroit and other places where establishments of engineering interest may be visited.

CHEMICAL ENGINEERING LABORATORY

The *Chemical Engineering Laboratory* occupies twenty-five rooms on the first and second floors of the Chemistry building. On the second floor are an office, two private laboratories, a laboratory accommodating four advanced students, and a general laboratory with desks for twenty students and a balance room. On the first floor, aside from private laboratories for instructors and advanced students, there are the following special laboratories:

The *Gas and Fuel Laboratory* occupies a group of six rooms; a geeral laboratory for gas analysis; a calorimeter room equipped with eight bomb calorimeters of various types, two Parr calorimeters and a Junkers gas calorimeter; a large and well-ventilated photometer room with an excellent photometer supplied with several types of standard lights and test burners; an instructor's laboratory; and a laboratory for advanced students. Unusual facilities for advanced work are offered at the gas experiment station maintained by the Michigan Gas Association at the works of the Ann Arbor Gas Co.

For *High Temperature Measurements* there are ten thermocouple pyrometers of various types, as well as Morse and Wanner optical pyrometers. The care, repair, and calibration of thermocouples is a regular part of the students' work.

The *Assay Laboratory* comprises an ore-crushing and sampling room with modern equipment, a room for the preparation of assay charges, a balance room, and a large furnace room.

For the study of *Portland Cement* there is in the furnace room a small gasoline fired rotary cement kiln which allows an accurate adjustment and determination of the burning temperature. In the cement testing room are sieves, molds, etc., and a Fairbanks-Morse testing machine, and in a room with approximately constant temperature is a micrometer for measuring changes in volume of bars of cement after setting. There are two polarising microscopes and equipment for making thin sections of clinker for microscopic examination.

The *Metallographic Laboratory* occupies three rooms adjacent to the pyrometer and the furnace rooms. Polishing lathes and the necessary facilities for treating the polished section before its microscopic examination are abundantly provided. There are five vertical illuminating microscopes, two Sauveur photomicrographic outfits and a most excellent Zeiss apparatus for the same purpose. Oil-fired and electrically heated furnaces are available for heating specimens of metal, and the permanently installed pyrometer allows an accurate observation of cooling curves and recalescence points.

For *Electrometallurgy and Electrochemistry* both direct and alternating current circuits are available over wide ranges in voltage. Direct current is supplied to the laboratory at 220 volts and may be used in as large amounts as 100 amperes. Lower voltages are obtained from a 10 K. W. generator with field separately excited by the 220 volt circuit. By varying this field excitation any desired voltage between 25 and 50 may be obtained. There is also an Edison storage battery of forty cells. Alternating current is supplied at 220 volts and is transformed to such lower voltages as may be needed for electric furnace work by a 10 K. W. transformer especially designed for the work. There is also a one-half K.V.A. variable step-up transformer capable of giving from 10,000 to 40,000 volts together with a rotating rectifying device for changing the high voltage discharge to direct current. This apparatus is available for experiments on the effect of the silent discharge through gases or on particles suspended in gases. The necessary auxiliary apparatus for measuring and controlling these currents is amply provided. Most of the electric furnaces have been made in the laboratory and their repair and construction is a regular part of the work.

For *Clay Testing and Ceramics* there are two ball mills, two mixing machines, a three-foot dry and wet pan, a brick-press, and an adequate number of oil-fired kilns.

The *Bituminous Paving Materials laboratory* contains two penetrometers, two Engler and one Scott viscosimeters, a Smith ductility machine, a Forrest extractor, flash-point testers of various patterns, a copper still for tar distillation, flow plates for pitch and the necessary auxiliary apparatus.

Pulp and Paper Laboratory.—The equipment in this laboratory consists of digestors for cooking soda, sulphate, and sulphate pulps; a diaphragm screen; a beating engine; apparatus for testing the consumption of bleach; a mould for hand-made sheets; a press, burnisher and trimmer for drying and finishing the sheets; a toluene vapor oven for moisture determinations and a suction sheet machine for making up sheets in color matching and filler retention tests. Apparatus is also at hand for microscopic and chemical analyses of pulps and papers.

MARINE ENGINEERING LABORATORY

The *Experimental or Naval Tank* is a unique feature of the College of Engineering. The object of the tank is to enable experiments of all kinds, including resistance, propulsion, steering, etc., to be made upon models of ships and propellers. The tank occupies one side of the ground floor of the Engineering building, and is 300 feet long, 22 feet wide, with a depth of water of 10 feet. By means of a false bottom, which can be set in varying positions, the depth of the water can be changed so that experiments on the effect which shallow water has upon the speed of vessels may be performed.

The tank is spanned by a traveling truck which can be driven at any desired speed. Upon this truck are mounted the necessary dynamometers to which the ship models are attached and which measure the resistance at any speed.

Adjoining the tank is the work shop where the ship models are made. The size of the models used runs from ten to twelve feet in length, and they are usually made of paraffin wax. A clay mould is first made approximately to the shape desired and a canvas core inserted. Melted paraffin is then poured into the mould and, after cooling, the rough model is transferred to a specially designed cutting machine. This consists essentially of two moving tables or platforms upon one of which is placed the rough model and upon the other the drawing of the lines of the vessel which it is desired to reproduce. The model moves under a pair of revolving cutters which are made to follow the lines upon the drawing. After cutting, the model is finally faced up by hand, carefully checked and weighed, and sufficient ballast added when it is placed in the water, to bring it to the desired draft, and displacement.

The power required to drive a full sized vessel may easily be determined from the model experiment; and systematic investigations upon various forms of vessels, are continuously performed.

The tank is also used for testing and calibrating current meters.

The *Mould Loft* is situated on the top floor of the north wing of the Engineering building and is used for laying off vessels on the full size. Students are also allowed the use of this room for the construction of small vessels. For this purpose steam boxes for bending frames, etc., and other necessary tools, are provided.

USE OF LABORATORIES FOR PUBLIC SERVICE

In 1913, the Regents placed the Highway Laboratory at the service of the cities, villages, counties, and highway officers of the State, for the testing of brick, stone, gravel, and other highway materials without charge other than the expense of shipment of samples. Tests are now being made of road materials and full records are being kept of this work.

Tests of sewer pipe, tile, and other classes of construction material may also be made for municipalities in the Civil Engineering Laboratories.

When practicable, tests of engines and boilers, and of machinery in general are made upon request and by special arrangement as to terms.

Tests of materials are also conducted for private parties and reported upon when desired. The data of all experiments and tests made are kept in the laboratory records.

All the laboratory work is upon a practical basis and is done as nearly as possible as it would be done in any well arranged manufacturing establishment.

OTHER LABORATORIES, LIBRARIES, AND MUSEUMS

For description of other University laboratories, libraries, and collections for the study of art. archæology, ethnology, mineralogy, geology, paleontology, zoology, etc., and for general information concerning the University, see page 51.

VISITS OF INSPECTION

The educational value of visits of inspection is well recognized and inspection trips are regularly made in connection with many of the courses. The wonderful industrial growth of Detroit and Toledo during the last decade has made those cities centers where large and modern illustrations of almost all types of engineering structures and processes may be seen. Inspection trips are regularly made by all second year Engineering students in connection with their course in Materials of Construction. Smaller parties of more advanced students visit places of especial professional interest. Trips of several days' duration are made during the Spring recess.

THE MENTOR AND ASSEMBLY SYSTEM

When the student enters the College of Engineering he is at once assigned to a mentor, or faculty advisor, and students thus assigned are to continue with the same mentor throughout their college course. This mentor is not appointed merely to advise the student with respect to his studies but to take the place of an elder brother on the faculty to whom the student may go and talk over freely any phase of his college life. To help the mentor advise each student in his group with regard to his studies a card system of reports is used which gives each mentor each student's grades six weeks after the beginning of the semester and four weeks before the final examinations.

Every week all freshmen in the College of Engineering are brought together in the Freshman Assembly. Here they listen to a talk by the Dean, or some speaker secured by him, and have their class meeting. The Sophomore, the Junior, and the Senior Assemblies meet four times a semester and are regarded as invaluable not only to the mentor system but for purposes of class organization.

THE GROUP SYSTEM OF ELECTIVE STUDIES

In July, 1912, there went into effect a complete revision of all the programs in Engineering, by which it was made possible for a student in his senior year to have a much wider range of elective work than formerly. The new system provided that of the 140 hours of credit required for graduation, 125 to 128 hours only are prescribed and 12 to 15 hours may be elected. These elections may be made up from the groups of studies outlined below or from other courses approved by the Head of the Department.

The Group System allows the student to receive his instruction in the advanced subjects from a specialist. It also permits a student desiring to take up a fifth year of residence to specialize in some particular branch of engineering. A student in any group will be allowed to elect work in the other departments of engineering or in the other colleges or schools of the University, subject to the approval of the Head of the Department. A student desiring to obtain special scientific knowledge or special business training by building on the fundamental subjects of engineering may be allowed to elect scientific courses or courses in Economics or Business Administration under the direction and approval of the Head of his Department.

The groups of studies and the scope of the work which they cover are given in the following:

CIVIL ENGINEERING GROUPS

(A) *Structural Engineering.*—Covering the subjects of Structural Steel and Reinforced Concrete.

Courses in theory and design of steel, concrete and masonry are given by the department of Civil Engineering.

Courses in strength and resistance of materials and testing materials are given by the department of Engineering Mechanics.

Courses in metallurgy, micro-metallurgy and chemical technology of building materials are given by the department of Chemical Engineering.

(B) *Hydraulic Engineering.*—Covering the subjects of Hydro-Electric Power Development, Irrigation and Drainage, and Rivers and Harbors.

Courses in hydraulics, hydrography, and in theory and design of the different branches of hydraulic engineering are given by the department of Civil Engineering.

Courses in hydraulic machinery, water turbines, turbine design, and pumping machinery are given by the department of Mechanical Engineering.

Courses in electrical machinery, generating stations, and electrical distribution are given by the department of Electrical Engineering.

(C) *Transportation Engineering.*

Courses in railway location, construction and maintenance, railway design courses, and history of transportation are given by the department of Civil Engineering.

Surveying and advanced railway surveying courses are given by the department of Surveying.

Courses in elements of accounting, railway accounting, railway operation, railway finance, railway tariffs, and economics are given by the department of Economics.

Courses in signalling and electrical engineering are given by the department of Electrical Engineering.

(D) *Sanitary and Municipal Engineering.*—Covering the subjects of Sanitary Engineering, Municipal Engineering, and Highway Engineering.

Courses in theory, design, and laboratory are offered by the department of Civil Engineering.

Courses in bacteriology, water analysis, and hygiene are given in the Medical School.

Courses in testing materials are given by the department of Engineering Mechanics.

Courses in heating and ventilation are given by the department of Mechanical Engineering.

(E) *General Engineering Science.*—This group is specially arranged to permit civil engineering students who are candidates for the bachelor's degree, to secure the fundamental training in civil engineering and to pursue advanced elective work in mathematics, physics, astronomy, mechanics, or chemistry.

MECHANICAL ENGINEERING GROUPS

(A) *Steam Power Engineering.* This group may include all the elective courses in Mechanical Engineering relative to steam prime movers, and auxiliary machinery found in steam power plants, including steam boilers, steam turbines, steam engines, coal handling machinery, pump and air compressors, power house design and construction.

(B) *Internal Combustion Engineering*: Includes courses in Mechanical Engineering relating to internal combustion engines and gas producers, including oil, gas and gasoline engines, their design, construction, and operation.

(C) *Hydro-Mechanical Engineering,* which may include courses in hydraulic machinery such as turbine, pumps both reciprocating and centrifugal. A special laboratory is maintained for the testing of hydraulic machinery.

(D) *Heating, Ventilating and Refrigerating Engineering.* Special courses are given in Heating, Ventilation, and Refrigeration, including the design of heating and ventilating plants. The mechanical laboratory has special apparatus designed for conducting tests in Heating and Ventilation; it also has a refrigerating plant used entirely for experimental purposes.

(E) *Industrial Engineering.* This group is arranged to provide for students who wish to prepare themselves for business branches of manufacturing plants or to study methods of management or production in manufacturing plants. It includes courses in shop management, motion study, design of shop machinery, and business administration. The engineering shops are used for experimental work in these lines.

(F) *Automobile Engineering.* Special work is given in the design, construction and operation of the Automobile, which includes courses in engine and chassis design. A special laboratory is maintained for the experimental study of the Automobile.

Every student is required to elect a design course in some particular group. He must have the prerequisites in this group of studies for this design course which he elects.

ELECTRICAL ENGINEERING GROUPS

(A) *Communication Group.* About Course 16 — Advanced Telephones—which forms the key subject, the student may group selected courses bearing on the communicating arcs or supplementing the technique thereof by the broader matters of economics, phonetics, etc.

(B) *Machine Design Group.* Either Course 6 or 6*a* may be taken as the key subject supplemented by cognate subjects in Electrical, Mechanical, or Civil Engineering, or economics, aiming toward the preparing of the student for machine design, application or factory production.

(C) *Power Group.* Design Course 19 forms the key course about which may be grouped courses in Electrical, Civil, and Mechanical Engineering and economics, so as to train the student for the design and operation of power plants, the supervision of power production or its application in industry and transportation.

(D) *Railway Group.* Course 8 in Electric Railways is the key course. The other group courses are Mechanical and Civil Engineering courses and courses in economics such as will fit the student for work on railways, either steam or electric, in operation, administration, or design.

(E) *Illumination Group.* About Course 15 in Advanced Lighting may be grouped courses in physics, chemistry, psychology, economics, architecture, and fine arts, such as will train the student toward ability to solve problems concerned with the most effective production of illuminants and their most efficient, effective, and artistic application.

CHEMICAL ENGINEERING GROUPS

(A) *Metallurgical Group.* This group contains options from the advanced courses in metallurgy, ore dressing, and chemical engineering machinery in the department of Chemical Engineering; the testing of materials in the department of Engineering Mechanics; and courses in mineralogy and geology.

(B) *Gas Engineering Group.* This group contains options from the courses in gas manufacture and chemical engineering machinery in the department of Chemical Engineering; gas engines, power plants, and the valuation of public utilities in the department of Mechanical Engineering; electrical distribution and illumination in the department of Electrical Engineering; and business organization and management in the department of Economics.

(C) *Organic Industrial Group.* This group contains options from the courses in theoretical and organic chemistry in the department of Chemistry; bacteriology in the Medical School; water purification and sewage disposal in the department of Civil Engineering; and courses in Economics.

(D) *General Manufacturing Group.* This group contains options from the courses in chemical engineering machinery in the department of Chemical Engineering; from courses in mechanical engineering, electrical engineering, and economics; and eight hours of free electives.

(E) *Pulp and Paper Manufacturing Group.* This group contains options from the courses in pulp and paper manufacture and the courses in chemical engineering machinery in the department of Chemical Engineering; from courses in identification of woods in Forestry and in the microscopic study of woody plants in Botany; from courses in Electrical Engineering; Mechanical Engineering; in hydraulics; in Civil Engineering; and in Economics.

MARINE ENGINEERING GROUPS

(A) *Naval Architecture.* The courses in this department are arranged for those who wish to devote the principal part of their studies to the design and construction of ships. It also includes courses in the departments of Engineering Mechanics, Mechanical Engineering, and Electrical Engineering.

(B) *Marine Engineering.* The courses in this department are arranged for those who wish to specialize more in the design of the machinery connected with ships. Courses in steam turbines, gas and oil engines, and hydraulic machinery are given in the department of Mechanical Engineering, and courses in electrical machinery in the department of Electrical Engineering.

SEQUENCE OF STUDIES

The work of the first year in the four-year curricula leading to the degree of Bachelor of Science in Engineering is the same for all students in the College of Engineering. At the end of the first year, all Engineering students elect either the civil engineering, the mechanical engineering, the electrical engineering, the chemical engineering, or the marine engineering curriculum.

There is a limited opportunity for electives, as outlined in the description of the group system, and credit obtained in advance at entrance may leave a place for further elections. After the first year the student may take work to the amount of ***eighteen hours*** per week, as arranged by the classification committee; but ***he may wisely, in some cases, take a smaller number of hours,*** if he can in that way do better work.

REQUIREMENTS FOR GRADUATION

THE DEGREE OF BACHELOR OF SCIENCE IN ENGINEERING

To earn the degree of Bachelor of Science in Engineering, the dent must secure ***one hundred and forty Hours of Credit**** in a prescribed curriculum, as given below, eight hours of which can be earned in one summer session. The diploma given indicates the line of study pursued. A time limit is not fixed; but four years and one summer session are usually needed for the work required for the degree.

HOURS OF WORK REQUIRED FOR THE DEGREE OF BACHELOR OF SCIENCE IN ENGINEERING.

SUBJECT.	Civil.	Mech.	Elect.	Chem.	Mar.
English	6	6	6	6	6
Language and Cultural Electives	16	16	16	16	16
Mathematics	18	18	18	16	18
Physics	10	10	14	10	10
Chemistry	5	5	5	30	5
Astronomy	2	0	0	0	0
Geology	3	0	0	0	0
Drawing	4	4	4	4	4
Shop Practice	4	12	8	4	4
Surveying	15	2	2	2	2
Engineering Mechanics	12	12	12	7	12
Civil Engineering	22	3	3	0	3
Mechanical Engineering	4	27	9	9	26 or 21
Electrical Engineering	4	4	26	4	4
Chemical Engineering	3	3	3	19	3
Marine Engineering	0	0	0	0	15 or 20
Law	0	2	0	0	0
Group Option	12	16	14	13	12
Total	140	140	140	140	140

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* For explanation of the term Hour of Credit, and for further information about the courses prescribed for graduation, see Engineering Announcement.

COMBINED COLLEGIATE AND ENGINEERING CURRICULUM

An arrangement has been entered into between Albion College and the College of Engineering of the University, whereby students who satisfactorily complete three years of work at Albion, including certain specified courses, may enroll in the College of Engineering, and receive the degree of Bachelor of Arts from Albion College at the end of their first year of residence at the University and the degree of Bachelor of Engineering at the end of the following year. The details of this course will be given in the Announcement of the College of Engineering.

A similar arrangement has been made with Olivet College.

FELLOWSHIPS IN CIVIL ENGINEERING

Mr. Roy D. Chapin has contributed $750 annually, commencing with the year 1916-1917, for the investigation of problems connected with Highway Engineering, particularly directed towards the state of road surfaces. The result of these investigations is to be for the benefit of the people of the State of Michigan. The fellowship is open to graduates of the University, the State Agricultural College, and the State School of Mines. Five hundred dollars a year of the amount is available for the fellowship, the remainder to defray expenses.

Mr. Alexander Dow has contributed $750 annually commencing with the year 1916-1917 for the investigation of the most desirable and economical types of roads for Washtenaw County, looking to the use of local materials.

FELLOWSHIPS IN CHEMICAL ENGINEERING

Fellowships in Gas Engineering.—The Michigan Gas Association has since 1900 contributed about one thousand dollars annually for the investigation of problems connected with the manufacture and utilization of gas. About four-fifths of this amount is usually available for fellowships. The holders of these fellowships for the year 1916-1917 are Harold Orlin Andrew, B.Ch.E., and Frederick Clifford Binnall, B.S.

The Acme White Lead and Color Works Fellowship in Paint and Varnish Manufacture.—The Acme White Lead and Color Works of Detroit has maintained since 1911 a fellowship with a value of five hundred dollars for the study of problems connected with the manufacture of paints and varnishes. The holder of the fellowship for 1916-1917 is Erle Arlington Brock, B.S.

Michigan Pulp and Paper Manufacturers Fellowship in Chemical Engineering. — The Michigan Pulp and Paper Manufacturers have united in subscribing six hundred dollars a year for five years for a fellowship to investigate problems of interest to their industry. The holder of the fellowship for the year 1916-1917 is Clarence William Hallahan, M.A.

Detroit Edison Company's Fellowship in Chemical Engineering.—The Detroit Edison Company has since 1915 given the sum of six hundred dollars annually for the investigation of materials used in the construction of central station equipment. The holder of this fellowship for the year 1916-1917 is Robert Samuel Archer, B.Ch.E.

Detroit Copper & Brass Rolling Mills Fellowship.—The Detroit Copper Copper & Brass Rolling Mills has given the sum of six hundred dollars for the investigation of methods to produce better copper and brass products. From this fund Harold James Smith, B.Ch.E., holds a fellowship of five hundred dollars for the year 1916-1917.

The Detroit Steel Castings Company's Fellowship.—The Detroit Steel Castings Company has given the sum of six hundred dollars for studies which may lead to the production of better steel castings. Edward Robert Young, B.Ch.E., holds a fellowship of five hundred dollars for the year 1916-1917 from this fund.

COURSES OF INSTRUCTION

The courses offered for the year 1916-1917 are described below. The amount of credit toward graduation assigned to each course is indicated by the expressions *one hour, two hours, etc.*

ENGLISH

The work in English is based on the assumption that the engineering or architectural student needs in general to be able to speak and to write, and to enjoy books in a sensible and discriminating way. He must also prepare definitely for the particular kind of writing demanded by his profession. There have been provided, therefore, in addition to the general reading and writing courses, a number of technical courses designed to meet the special needs of the student in engineering and architecture.

FIRST SEMESTER

1. Theme-Writing and Oral Exposition. Eleven sections. *Four hours*. Assistant Professor MORIARTY, Mr. GRINNELL, Mr. THORNTON, Mr. WRIGHT, Mr. BENNETT, Mr. SCHNEIDER.

1*a*. Theme-Writing and Oral Exposition. For students in Architecture who cannot take English 1. *Two hours.* Mr. BENNETT.

1*x*. Theme-Writing. This course is taken without credit by all students conditioned in English 1. Assistant Professor NELSON.

2. Theme-Writing and Oral Exposition. One section. *Two hours.* Assistant Professor MARCKWARDT.

3. Oral Exposition and Argument. For juniors and seniors, and sophomores having a grade of B in English 1. One section. *Two hours.* Mr. THORNTON.

5. Preparation and Presentation of Scientific and Technical Papers. For juniors and seniors. One section. *Two hours.* Assistant Professor NELSON.

6. Engineering Reports. For juniors and seniors. *Two hours.* Assistant Professor NELSON.

9. Business English. For juniors and seniors. Three sections. *Two hours.* Assistant Professor MORIARTY.

10. Business English. For juniors and seniors. One section. *Two hours.* Assistant Professor MORIARTY.

16. English for Foreign Students. *Four hours.* Assistant Professor NELSON.

21. General Reading Course. Two sections. *Two hours.* Mr. SCHNEIDER, Mr. WRIGHT.

27. Scientific Reading. Two sections. *Two hours.* Assistant Professor MARCKWARDT.

SECOND SEMESTER

1. Theme-Writing and Oral Exposition. Six sections. *Four hours.* Mr. GRINNELL, Mr. THORNTON, Mr. WRIGHT, Mr. SCHNEIDER, Mr. BENNETT.

1*x*. Theme-Writing. This course is taken without credit by all students conditioned in English 1. Assistant Professor NELSON.

1*a*. Theme-Writing and Oral Exposition. For students in Architecture who cannot take English 1. *Two hours.* Mr. BENNETT.

2. Theme-Writing and Oral Exposition. Two sections. *Two hours.* Assistant Professor MARCKWARDT.

2*a*. Theme-Writing and Oral Exposition. For students who begin their work with 1*a*. *Four hours.* Mr. BENNETT.

3. Oral Exposition and Argument. For juniors and seniors, and sophomores having a grade of B in English 1. Two sections. *Two hours.* Mr. THORNTON.

4. Note-Taking. *Two hours.* Mr. THORNTON.

6. Engineering Reports. For seniors. Two sections. *Two hours.* Assistant Professor NELSON.

7. Technical Journalism. *Two hours.* Mr. WRIGHT.

9. Business English. For juniors and seniors. Three sections. *Two hours.* Assistant Professor MORIARTY.

10. Business English. For juniors and seniors. Two sections. ***Two hours.*** Assistant Professor MORIARTY.

17. English for Foreign Students. ***Four hours.*** Assistant Professor NELSON.

21. General Reading Course. Two sections for freshmen and sophomores, and one section for juniors and seniors. *Two hours.* Mr. GRINNELL, Mr. WRIGHT, Mr. SCHNEIDER.

23. The Modern Novel. *Two hours.* Assistant Professor MARCKWARDT.

26. The Modern Drama. *Two hours.* Mr. GRINNELL.

28. Scientific Reading. Three sections. *Two hours.* Assistant Professor MARCKWARDT.

GERMAN

The aim of the instruction in German is to help the student to a reading and speaking knowledge of the language. Special attention is paid to scientific and technical literature. Elective courses are offered for the accommodation and benefit of students who have the time and inclination to carry their language work beyond the limits of the required courses.

BOTH SEMESTERS

1. Elementary Course. Grammar and reading with constant practice in writing and speaking German. Three sections first semester, one section second semester. *Four hours.* Professor WAIT, Assistant Professor HAUHART, and Mr. WILD.

2. Elementary Course continued. Two sections first semester, three sections second semester. *Four hours.* Dr. SCHWABE, and Mr. WILD.

3. German Scientific Literature. Nine sections the first semester and four the second. *Four hours.* Professor WAIT, Assistant Professors LEE and HAUHART, Mr. WILD, and Dr. SCHWABE.

4. German Scientific and Technical Literature. Four sections the first semester and nine the second. *Four hours.* Assistant Professors LEE and HAUHART, Mr. WILD, Dr. SCHWABE.

5. Advanced Course in German. Technical Literature (Elective). *Two hours.* Mr. WILD.

7. Journalistic and Commercial German. *Two hours.* Professor **Wait.**
9. German Chemical Reading. *Two hours.* Assistant Professor **Lee.**

   This course is equivalent to Chemistry 2c.

FRENCH

The aim of the instruction in French is to help the student to a reading and speaking knowledge of the language. Special attention is paid to scientific and technical literature. Elective courses are offered for the accommodation and benefit of students who have the time and inclination to carry their language work beyond the limits of the required courses.

BOTH SEMESTERS

1. Elementary Course. Grammar and reading, with constant practice in writing and speaking French. Two sections each semester. *Four hours.* Assistant Professor **Adams**, and Mr. **Hurlburt.**
2. Elementary Course continued. Two sections the first semester and three the second. *Four hours.* Assistant Professor **Kenyon.**
3. French Scientific Literature. Three sections first semester, two sections second semester. *Four hours.* Assistant Professor **Adams**, and Mr. **Rathke.**
4. French Scientific and Technical Literature. One section first semester, three sections second semester. *Four hours.* Assistant Professor **Kenyon.**

SPANISH

The courses in Spanish are offered chiefly to meet the demands of students looking forward to a professional career in countries where Spanish is the prevailing medium of communication.

Opportunity for advanced work in Spanish is offered to students who desire to make themselves specially proficient in this language.

BOTH SEMESTERS

1. Elementary Course. Grammar and reading, with constant practice in writing and speaking Spanish. Two sections first semester, one section second semester. *Four hours.* Assistant Professors **Adams** and **Kenyon**, Mr. **Hurlburt**, and Mr. **Rathke.**
2. Elementary Course continued. One section the first semester and two the second. *Four hours.* Assistant Professors **Adams** and **Kenyon**, Mr. **Hurlburt**, and Mr. **Rathke.**
3. Reading, Conversation, and Correspondence. *Four hours.*

MATHEMATICS

Professors Ziwet, Markley, Butts, Field, and Running, Assistant Professors Love, Hildebrandt, Stevens, and Fort, Dr. Garretson, Dr. Hopkins, Dr. Poor, Mr. Rouse, Dr. Kuestermann, Dr. Allen, and Dr. Nelson.

Students of engineering are required to take in order Courses 1, 2, 3, and 4. Course 4 may be replaced by Courses 4a and 4b. Students of chemical engineering are not required to take Course 4b. Students who have not received credit in plane trigonometry on admission must elect Course 1a in their first semester.

1a. Plane Trigonometry. *Two hours.* Both semesters.
Definitions of the trigonometric functions; principal relations between them; their application to the solution of triangles; use of trigonometric and logarithmic tables; applied problems.

1. Algebra and Analytic Geometry I. *Four hours.* Both semesters.
Coordinates in the plane; the straight line; linear equations; determinants; permutations and combinations; the circle; complex numbers; quadratic and cubic functions and equations.

2. Algebra and Analytic Geometry II. *Four hours.* Both semesters.
Polynomials; numerical equations; the parabola, ellipse, and hyperbola; the general equation of the second degree; solid analytic geometry: the plane, the line, the sphere, and the quadric surfaces.

3. Calculus I. *Five hours.* Both semesters.
Variables; functions; limits; differentiation; simple applications of the derivative; tracing and discussion of curves; integration and its most elementary applications.

4. Calculus II. *Four hours.* Both semesters.
Definite integrals and their application to the determination of lengths of arcs, areas, volumes, mass moments, moments of inertia, etc.; partial and total derivatives; infinite series. Elements of the solution of differential equations, with applications.

4*a*. Calculus IIa. *Three hours.* Both semesters.
Definite integrals and their application to the determination of lengths of arcs, areas, volumes, mass moments, moments of inertia, etc.; partial and total derivatives; infinite series.

4b. Calculus IIb. *Two hours.* Both semesters.
Elements of the solution of differential equations, with applications.

15. Advanced Mechanics I. *Three hours.* First semester.

16. Advanced Mechanics II. *Three hours.* Second semester.

17. Theory of the Potential. *Three hours.* First semester.

36. Vector Analysis. *Three hours.* Second Semester.

43. Integral Equations. *Two hours.* First or second semester.

57. Empirical Formulas and Graphical Methods II. *Two hours.* First semester.

58. Empirical Formulas and Graphical Methods I. *Two hours.* Second semester.

62. Linear Differential and Difference Equations. *Two hours.* First or second semester.

65. Analytic Differential Equations with Applications to Celestial Mechanics. *Three hours.* First semester.

69. Application of Integral Calculus in Mechanics. *Two hours.* First or second semester.

71. Projective Geometry, with Applications to Engineering Problems. *Three hours.* First semester.

PHYSICS

For a description of other courses offered in the department of Physics see page 257.

Laboratory work *twice a week,* means *two periods* of laboratory work a week, not simply two hours; credit, *two hours.* The fees for laboratory courses are based upon the *number of weekly periods* of two hours each, of laboratory work comprised in the course. Thus for a course requiring laboratory work *once a week,* the fee is $1.00; for one requiring work *twice a week,* $2.00; and so on.

Courses 1E and 2E are required from all students in Engineering and Architectural Engineering. The two courses are equivalent to Courses 1, 1*a,* 2, 2*a,* 3*a,* and 4*a,* offered in the College of Literature, Science, and the Arts. Students entering the College of Engineering with advanced standing must have completed these equivalent courses before they will receive credit for 1E and 2E.

Students in groups I and II in Architecture elect Courses 1, 1*a,* 2, and 2*a,* instead of 1E and 2E.

Other courses in Physics are given in the College of Literature, Science, and the Arts and may be elected by students of the Colleges of Engineering and Architecture.

All lectures in Physics are given in the west lecture room of the Physics building.

FIRST SEMESTER

Z. Physics for Entrance. No credit is given for this course. Mr. McGrath.

1E. Mechanics, Sound, and Heat. *Five hours.* Lectures, recitations, and laboratory work. Professor Henderson, Assistant Professor Rich, Mr. Sleator, Mr. Wright, Dr. Haseman, Dr. Harrington, and Assistants.

In this course at least half of the semester is devoted to elementary Mechanics; the remainder of the time, to Sound and Heat, all with experimental demonstrations. All members of the class have one period a week in the laboratory.

For this course a knowledge of the first year's work in mathematics is indispensible. The course is open to those only who have satisfied the entrance requirements in physics.

1*a*. Physical Problems. Required of students in groups I and II in Architecture. Lectures and recitations. Professor Randall, Mr. Sleator, Dr. Lindsay, Dr. Meyer, and Mr. Bell.

Course 1 must be preceded or accompanied by a course in plane trigonometry.

Students who have not satisfied the entrance requirement in physics must complete Course Z before they register for Course 1.

1*a*. Physical Problems. Required of students in groups I and II in Architecture.

2E. Magnetism, Electricity, and Light. Lectures, recitations, and laboratory work. *Five hours.* Assistant Professor Williams, Dr. Lindsay, Mr. Barnard, and assistants.

Course 2E is a continuation of Course 1E.

2. General Physics. *Four hours.* Magnetism, Electricity, and Light. Lectures and recitations. Assistant Professor Williams, Dr. Lindsay, and Mr. Barnard.

This course must be preceded by Course 1.

2*a*. Physical Problems. Required of students in groups I and II in Architecture.

5. Electrical Measurements. Lectures, recitations and laboratory. *Four hours.* Professor Smith, Dr. Kent, and an assistant. Fee, $2.00.

In the class work the principles of electrical behavior are critically studied and discussed. The laboratory exercises are designed to illustrate and emphasize these principles and to give the student some personal experience in the careful use of electrical measuring instruments. The course includes the modern methods of measuring current, resistance, electromotive force, and power, and the calibration of the instruments employed.

Course 5 must be preceded by 1E and 2E, or their equivalents. A knowledge of the calculus is also desirable.

SECOND SEMESTER

1E. Mechanics, Sound, and Heat. Lectures, recitations, and laboratory work. *Five hours.* Assistant Professor WILLIAMS, Dr. LINDSAY, Mr. BARNARD, and assistants.

1. General Physics: Mechanics, Sound, and Heat. *Four hours.* Lectures and recitations. Assistant Professor WILLIAMS, Dr. LINDSAY, and Mr. BARNARD.

1*a*. Physical Problems.

2E. Magnetism, Electricity, and Light. Lectures, recitations, and laboratory work. *Five hours.* Professor HENDERSON, Assistant Professor RICH, Mr. SLEATOR, Mr. WRIGHT, Dr. HASEMAN, Dr. HARRINGTON, and assistants.

Course 2E is a continuation of Course 1E.

2. General Physics. *Four hours.* Magnetism, Electricity, and Light. Lectures and recitations. Professor RANDALL, Mr. SLEATOR, Dr. LINDSAY, Dr. MEYER, and Mr. BELL.

This course must be preceded by Course 1.

2*a*. Physical Problems.

6. Electrical Measurements. Lectures, recitations and laboratory. *Four hours.* Professor SMITH. Fee, $2.00.

This is a continuation of Course 5, and includes measurements of capacity, self and mutual inductance, and the fundamental measurements with alternating currents. Especial attention is given to the theory of the magnetic circuit and the determination of the magnetisation and hysteresis curves of iron and steel.

A working knowledge of the calculus is required.

20. Architectural Acoustics. *Two hours.* Assistant Professor RICH.

Lectures, with illustrative problems on sound transmission, distribution, and absorption, and an experimental study of the acoustical properties of certain rooms.

CHEMISTRY

For a description of all courses offered in the department of Chemistry, see page 263.

Students admitted with a deficiency in entrance chemistry must remove it by completing Courses 1 and 1*a*, but the credit thus obtained is entered on the admission, not the graduation requirements.

Other courses in chemistry are given in the College of Literature, Science, and the Arts, and may be elected by students of the Colleges of Engineering and Architecture, who have had the requisite preparation.

FIRST SEMESTER

1. Elementary Inorganic Chemistry. Experimental lectures and recitations. Three sections. *Two hours.* (For entrance, see above.) Professor BIGELOW.

1*a*. Laboratory Course accompanying Course 1. Six sections. *Two hours.* Dr. HARRIS.

2E. Principles of Inorganic Chemistry. Lectures, recitations, and laboratory. Five quiz sections. *Five hours.* Professor SMEATON and Dr. FERGUSON.

Open to those who have passed the entrance requirements in chemistry.

3. Qualitative Analysis. Recitations and laboratory work. *Five hours.* Mr. MCALPINE, Dr. MELOCHE, and Assistant Professor CARNEY.

Open to those who have completed Courses 2 or 2E.

3*a*. Qualitative Analysis. Recitations and laboratory work. Three sections. *Four hours.* Mr. COLE, and Mr. MCALPINE.

Open to those who have completed Courses 2 or 2E.

3*b*. Qualitative Analysis. Continuation of Course 3*a*. Two sections. *Four hours.* Assistant Professor CARNEY.

5. Quantitative Analysis. Beginning course. Recitations and laboratory work. *Five hours.* Assistant Professor WILLARD and Mr. PINKERTON.

Open to those who have completed Courses 3 or 3*b*.

7. Organic Chemistry. Lectures and laboratory work. *Five hours.* Professor GOMBERG, Mr. SCHOEPFLE, and Mr. SHERRARD.

Open to those who have completed Courses 3 or 3*b*.

15. History of Chemistry and Development of Chemical Theory. *Two hours.* Professor SMEATON.

28. Advanced Quantitative Analysis. Laboratory work, with lectures and quiz. *Three to five hours.* Assistant Professor WILLARD.

Open to those who have completed Course 5.

31. Independent Work in Mineral Analysis. Laboratory work. *Five hours.* Assistant Professor WILLARD.

Open to those who have completed Course 28.

34. Chemical Reading. *One hour.* Professor CAMPBELL.

43. Advanced Organic Chemistry and Ultimate Analysis. Laboratory work and reading. Continuation of Course 42. *Three, four, or five hours.* Professors GOMBERG and CONE.

SECOND SEMESTER

1*b*. General and Inorganic Chemistry. *Four hours.* Fee, $10. Lectures, recitations, and laboratory. Professor LICHTY.

This course offers an opportunity for those entering the University at the opening of the second semester to commence the study of chemistry, but no student will be admitted who might have elected 1 and 1*a*. Special permission must be obtained from the instructor in order to elect this course.

2E. Principles of Inorganic Chemistry. Lectures, recitations, and laboratory. Six quiz sections. *Five hours.* Professor SMEATON and Dr. FERGUSON.

Open to those who have passed the entrance requirements in chemistry.

2. Elementary Inorganic Chemistry. Lectures and recitations. Continuation of Course 1. Three sections. *Two hours.* Professor HALE.

2*a*. Laboratory Course accompanying Course 2. Five sections. *Two hours.* Professor HALE and Dr. HARRIS.

3. Qualitative Analysis. Recitations and laboratory work. *Five hours.* Mr. MCALPINE and Assistant Professor CARNEY.

Open to those who have completed Course 2 or 2E.

3*a*. Qualitative Analysis. Recitations and laboratory work. Three sections. *Four hours.* Mr. COLE and Dr. MELOCHE.

Open to those who have completed Course 2 or 2E.

3*b*. Qualitative Analysis. Continuation of Course 3*a*. Two sections. *Four hours.* Assistant Professor CARNEY.

5. Quantitative Analysis. Beginning course. Recitations and laboratory work. *Five hours.* Assistant Professor WILLARD and Mr. PINKERTON.

Open to those who have completed Course 3 or 3*b*.

8. Physical Chemistry. *Four hours.* Professor BIGELOW.

7*a*. Organic Chemistry. Continuation of Course 7. *Four hours.* Lectures, recitations, and laboratory work. Professor GOMBERG, Mr. SCHOEPFLE, and Mr. SHERRARD.

Open to those who have completed Course 3 or 3*b*, and who receive special permission.

15. History of Chemistry and Development of Chemical Theory. *Two hours.* Professor SMEATON.

28. Advanced Quantitative Analysis. Laboratory work, with lectures and quiz. *Three to five hours.* Assistant Professor WILLARD.
Open to those who have completed Course 5.

31. Independent Work in Mineral Analysis. Laboratory work. *Five hours.* Assistant Professor WILLARD.
Open to those who have completed Course 28.

34. Chemical Reading. *One hour.* Professor CAMPBELL.
Course 34 requires special permission.

43. Advanced Organic Chemistry and Ultimate Analysis. Laboratory work and reading. Continuation of Course 42. *Three, four, or five hours.* Professor GOMBERG.

ASTRONOMY

For a description of all courses offered in the department of Astronomy see page 255.

Courses 3 and 4 treat of the theory and practice of making and reducing astronomical observations. These courses require day and night work at the Observatory during a portion of the semester.

Course 3E is prescribed for students in Civil Engineering in the second semester, junior year.

FIRST SEMESTER

1. General Astronomy. The Solar System. Three sections. *Three hours.* Professors HUSSEY and CURTISS, and Dr. KIESS.
A descriptive course, including the fundamental principles of Astronomy, and a presentation of the leading facts respecting the sun, moon, planets, and comets. Occasional lantern illustrations.

3. Practical Astronomy. *Two hours.* Dr. KIESS.
The elements of Spherical Astronomy with practical applications. Theory of the sextant and transit and their use in the determination of time, latitude, longitude, and azimuth. The observational work at the Observatory in connection with this course will be varied to suit the needs of students from different departments.

SECOND SEMESTER

2. General Astronomy. Stars and Nebulae. Two sections. *Three hours.* Professor HUSSEY, and Dr. KIESS.
A general descriptive course in stellar and nebular astronomy. Occasional lantern illustrations. May be taken in continuation with Course 1, or independently, as desired.

2*a*. Elementary Practical Astronomy. *One hour.* Professor CURTISS.

Constellation studies and telescopic examinations of the heavenly bodies. Selected problems with the celestial globe and the equatorial telescope. Observational work during the day and night at the Observatory.

3E. Spherical Astronomy. *Two hours.* Dr. KIESS.

A brief résumé of Descriptive Astronomy followed by a thorough drill in the principles of Spherical Astronomy and computation.

MINERALOGY AND PETROGRAPHY

All courses offered by this department are given in the Mineralogical Laboratory which is located in the northeast corner of the new Natural Science Building. The mineral collections, Room 222, are open for inspection daily throughout the session from 9 to 12 A. M. and 2 to 4 P. M.

Courses 1, 2, 16, 17, and 17*a* are beginning courses. Course 1 is designed to meet the needs of students desiring an elementary knowledge of Mineralogy, and may be followed by Courses 4 and 5, or 9. Students desiring a more comprehensive beginners' course are advised to elect Course 2, which serves as the basis for the more advanced work of the department. Course 17 is designed to give a general knowledge of gems and gem minerals, and is open to all students, no previous training in mineralogy or the sciences being necessary. Students desiring a more intimate knowledge of gems should also elect the laboratory work, designated as Course 17*a*. Students of Chemistry and Chemical Engineering are advised to take Courses 2 and 5, or Courses 1, 4, and 5. Course 16 is designed especially for students of Architecture. For all courses involving laboratory work, a fee of $1.00 will be charged for each hour of credit given. A description of all courses offered in this department may be found on page 275.

FIRST SEMESTER

1. Elements of Mineralogy. Lectures and laboratory work. *Two hours.* Professor KRAUS, Mr. PECK, and assistants.

This course includes the elements of crystallography. physical and chemical properties, occurrences, uses, and determination of the more common minerals. For this course a knowledge of elementary inorganic chemistry is necessary.

2. General Mineralogy. Lectures and laboratory work. *Five hours.* Professor KRAUS, Assistant Professor HUNT, Mr. PECK, and assistants.

Students who have successfully completed Course 1 may elect this course as Course 2*a* and receive *three hours credit.*

Principles of crystallography, physical and chemical properties, origin, formation, decomposition, distribution, uses, and determination of the more important minerals. Prerequisites, Chemistry 2 and 3.

4. Determinative Mineralogy. Laboratory work. *Two hours.* Assistant Professor HUNT, and Mr. PECK.
   Intended for students who have completed Course 1 and wish to become more proficient in the determination of minerals by means of their physical characters.

9. Lithology. Lectures and laboratory work. *Two hours.* Assistant Professor HUNT.
   The lectures include, aside from a review of the rock-forming minerals, a discussion of the origin, modes of occurrence, alternations, methods of determination, and uses of the more important rocks. In the laboratory the student is required to determine by means of the macro-physical properties a large number of rock specimens. Field excursions will also be made in order to acquire facility in the rapid determination of rocks in the field. Prerequisites, Mineralogy 1 and Geology 1.

12. Quantitative Blowpipe Methods. Reading and laboratory work. *Two hours.* Assistant Professor HUNT.
   Practice in assaying by blowpipe methods of various kinds of ores, especially those of gold and silver. Prerequisite, Course 5.

SECOND SEMESTER

1. Elements of Mineralogy. Lectures and laboratory work. *Two hours.* Professor KRAUS, Mr. PECK, and assistants.
   This course includes the elements of crystallography, physical and chemical properties, occurrence, uses, and determination of the more common minerals, and also an introduction to the use of the polarizing microscope. For this course a knowledge of elementary inorganic chemistry is necessary.

4. Determinative Mineralogy. Laboratory work. *Two hours.* Assistant Professor HUNT, and Mr. PECK.
   Intended for students who have completed Course 1 and wish to become more proficient in the determination of minerals by means of their physical character.

5. Qualitative Blowpipe Methods. *Two hours.* Assistant Professor HUNT.
   This course involves the use of blowpipe reactions upon charcoal and plaster tablets, as well as other chemical methods useful in the determination of minerals. Prerequisites, Course 2, or Courses 1 and 4. Since only a limited number can be accommodated in this course, students are advised to consult the instructor as early as possible.

9. Lithology. Lectures and laboratory work. *Two hours.* Assistant Professor **HUNT**, Mr. **PECK**, and assistants.

The lectures include, aside from a review of the rock-forming minerals, a discussion of the origin, modes of occurrence, alternations, methods of determination, and uses of the more important rocks. In the laboratory the student is required to determine by means of the macro-physical properties a large number of rock specimens. Field excursions will also be made in order to acquire facility in the rapid determination of rocks in the field. Prerequisites, Mineralogy 1, and Geology 1.

16. Mineralogy and Lithology. *Three hours.* Assistant Professor **HUNT** and Mr. **PECK**.

This course is designed especially for students in architecture. Open to others only by special permission.

For this course a knowledge of elementary inorganic chemistry is necessary.

17. Gems and Precious Stones. Lectures and demonstrations. *Two hours.* Professor **KRAUS**.

This course discusses the general properties, occurrence, determination, and history of the various minerals used as gems and gem minerals. The various methods of distinction, especially for imitations and synthetic gems, will also be considered. No previous training in mineralogy or the sciences is required, although an elementary knowledge of chemistry and physics is highly desirable.

17*a*. Gems and Precious Stones. Laboratory work. *One hour.* Professor **KRAUS**, Mr. **PECK**, and assistants.

Students are given an opportunity to familiarize themselves with the various methods used in the scientific determination of gems and gem minerals. Three hours a week in the laboratory to be arranged. Must be accompanied or preceded by Course 17.

GEOLOGY AND GEOGRAPHY

For a description of all courses offered in the Department of Geology, see page 279.

The courses in Geology are planned to meet the requirements of students of engineering whose profession makes some knowledge of geology essential; men who are to have in their hands the control or operation of mines; and consulting geologists and geological engineers.

Research is especially encouraged along the lines of structural geology, paleontology, glacial geology, geography, and geophysics.

FIRST SEMESTER

1E. Introduction to Geology, for Engineering and Forestry Students. A course adapted to the needs of students in these departments and not open to others except by special permission. *Three hours.* Professors HOBBS and CASE, and assistant.

Students who can spare the time are recommended to take 1*a* and 1*b* (see p. 280) in place of 1E.

15. Soil Geology. A course designed to meet the needs of students in Engineering and Landscape Design as well as others desiring a less extended treatment of the subject than given in Course 15F. *Three hours. One hour laboratory to be arranged.* Assistant Professor COOK.

The attention of students desiring additional laboratory work is directed to Course 26.

16*a*. Economic Geology (non-metals). A general course treating of the nature, occurrence, and distribution of the non-metallic mineral resources such as coal, oil and gas, salt, gypsum, building stones, phosphate rock, etc. Geology 1*a* or 1E and Mineralogy 1 are prerequisite, while Geology 1*b* is strongly recommended. *Three hours.* Assistant Professor COOK.

31. Commercial Geography. *Three hours.* Dr. SAUER.

SECOND SEMESTER

1E. Introduction to Geology for Engineering and Forestry Students. A course adapted to the needs of students in these departments and not open to others except with special permission. *Three hours.* Lectures. Professors HOBBS and CASE, and assistant.

Students who can spare the time are recommended to take 1*a* and 1*b* (see p. 283) in place of 1E.

15F. Soil Geology. A repetition of this course as given in the first semester. *Three hours.* Assistant Professor COOK.

16*b*. Economic Geology (metals). In this course the metallic mineral resources are treated in the same manner as are the non-metallic resources during the first semester. Although this course may be elected independently of Geology 16*a*, both are essential to a general survey of the subject. Prerequisites the same as for Geology 16*a*. *Three hours.* Assistant Professor COOK.

DRAWING

FIRST SEMESTER

1. Geometrical Drawing. *Two, three,* or *four hours.* (Elective). Assistant Professor FINCH.

2. Free-Hand Drawing. Pencil, Pen, and Ink. Sketching. One section. *Two hours.* (Elective). Miss HUNT.

4. Descriptive Geometry I. Lectures and Drawing. Nine sections. *Two hours.* Professor GOULDING, Assistant Professors FINCH and ABBOTT, Mr. ORBECK, Mr. MICKLE, Mr. PALMER, Mr. NICKELSEN, and Mr. CROCKER.

4*a*. Descriptive Geometry and Shades and Shadows. Recitations and drawing. *Three hours.* Mr. BENNETT, and Mr. ORBECK.

5. Descriptive Geometry II. Lectures and Drawing. Three sections. *Two hours.* Assistant Professors FINCH and ABBOTT, Mr. PALMER, and Mr. CROCKER. Course 5 must be preceded by Course 4.

5*a*. Advanced Projections and Stereotomy. *Two hours.* Mr. BENNETT.

Course 5*a* must be preceded by Course 4*a*.

8. Water-Color Drawing. *Two hours.* (Elective). Miss HUNT. Course 8 must be preceded by Courses 2, 3, and 7.

9. Historic Ornament and Design. *Two hours.* (Elective), Miss HUNT.

10. Free-Hand Lettering. Two sections. *Two hours.* (Elective). Mr. PALMER.

SECOND SEMESTER

3. Free-Hand Drawing. (Advanced). *Two hours.* (Elective). Miss HUNT.

4. Descriptive Geometry I. Lectures and Drawing. Three sections. *Two hours.* Assistant Professors FINCH and ABBOTT, and Mr. ————.

4*a*. Descriptive Geometry and Shades and Shadows. Recitations and drawing. *Three hours.* Mr. BENNETT.

5. Descriptive Geometry II. Lectures and Drawing. Eight sections. *Two hours.* Professor GOULDING, Assistant Professors FINCH and ABBOTT, Mr. ORBECK, Mr. MICKLE, Mr. PALMER, Mr. NICKELSEN, and Mr. CROCKER.

5*a*. Advanced Projections and Stereotomy. Two sections. *Two hours.* Professor GOULDING, Mr. BENNETT.

7. Water-Color Drawing. *Two hours.* (Elective). Miss HUNT.

9*a*. Water-Color Drawing. Historic Ornament and Design (continued). *Two hours.* (Elective). Miss HUNT.

10. Free-Hand Lettering. *Two hours.* (Elective). Mr. PALMER.

SHOP PRACTICE

All courses in shop practice are under the direction of Professor W. L. MIGGETT, Superintendent of Shops. Instruction is given in the various branches by special shop assistants.

The shop courses consist of actual practice in the shops, together with class-room recitations for which outside preparation is made from text-books and oral instruction. Courses 1 to 4 may be continued by advanced students as Courses 1*a* to 4*a*. Special arrangements are made for students who desire to take more advanced shop courses with a view of preparing themselves for teaching these subjects.

FIRST SEMESTER

1. Wood Shop. Eight sections. *Two hours.*
2. Forge Shop. Eight sections. *Two hours.*
3. Pattern Making and Foundry. Two sections. *Four hours.*
4. Machine Shop. Three sections. *Four hours.*

SECOND SEMESTER

1. Wood Shop. Seven sections. *Two hours.*
2. Forge Shop. Seven sections. *Two hours.*
3. Pattern Making and Foundry. One section. *Four hours.*
4. Machine Shop. Three sections. *Four hours.*

SURVEYING

Courses 1, 2, and 3 are designed primarily for students of Civil Engineering. Students of Landscape Design are now required to take these courses and they are frequently elected by others who desire a thorough training in the theory and practice of surveying. All courses are given on the campus at Ann Arbor, except Course 3, which embraces the field work at Camp Davis. Course 4 is offered for the convenience of students who desire a brief course in the use of instruments. All students of engineering, except those of the Civil Engineering group, are required to take this course. It is offered both semesters and during the summer session. Courses 12 and 13 are designed for students of Forestry. The work prescribed therein runs parallel to Course 1 and 2 in so far as possible. When students have completed Courses 12 and 13 they are qualified to elect Course 3.

Course 3 is given during the regular summer session, beginning soon after the first of July and ending a few days after the 20th of August. The camp is conducted on a practical basis and the methods employed are such as are generally applied in the field.

The student is able to secure different work for practically every day of the session, however, so that the training obtained is more varied than an engineer would receive in a period covering many years of actual service in the field. The exercises embrace railroad surveys, triangulation surveys, sounding work, earthwork, azimuth observations and computations, adjustments of instruments, stadia surveys, canal surveys, the measurement of base lines, office work, etc.

Students cannot successfully carry the elementary courses in surveying until they have completed a thorough course in plane trigonometry. The student has less difficulty after he has completed courses in analytic geometry and higher algebra.

BOTH SEMESTERS

1. Elementary Surveying. Lectures. Text-book and field practice. *Three hours.* Four sections. Professor JOHNSTON, Assistant Professors MERRICK, RASCHBACHER, BRODIE, and CAREY.
   Course 1 is given only during the first semester, field work being prosecuted until about the first of December.

2. Continuation of Course 1. *Four hours.* Course 2 is given during the second semester only.

3. Summer work at Camp Davis, described above.

4. Use of Instruments. Four sections. *Two hours.* Assistant Professors MERRICK, ATWELL, CAREY, BRODIE, and RASCHBACHER.
   Course 4 is offered both semesters and during the summer session.

5. Least Squares. *Two hours.* Professor JOHNSTON. Both semesters.

6. Geodesy. Lectures. Reading. *Three hours.* Professor JOHNSTON. Both semesters.

7. Municipal Surveying. *Two hours.* Assistant Professor COX. Both semesters.

8. The Surveyor and the Public. *Two hours.* Professor JOHNSTON. Both semesters.

9. Railway Surveying. *One hour.* Assistant Professor BAILEY. Second semester only.

10. Engineering Photography. *Two hours.* Professor JOHNSTON and Assistant Professor BRODIE. Both semesters.

12. Surveying and Drawing, Elementary, for Students of Forestry. *Four hours.* Assistant Professor ATWELL. First semester only.

13. Continuation of Course 12, for Students of Forestry. *Four hours.* Assistant Professor ATWELL, Second semester only.

ENGINEERING MECHANICS

FIRST SEMESTER

1. Statics, Center of Gravity, Moments of Inertia. Seven sections. *Four hours.* Professor PATTERSON, Assistant Professors STEVENS and FINCH, Mr. VAN DEN BROEK, Mr. KUESTERMANN, Mr. SWINTON, Mr. ERIKSEN, Mr. PALMER, and Mr. MCNEIL.
Course 1 must be preceded by Course 3E in Mathematics and Course 1E in Physics.

2. Strength and Resistance of Materials. Fundamentals of Structural Design. Theory of strength and stiffness of beams, girders, columns, shafts, etc. Ten sections. *Three hours.* Professor PATTERSON, Assistant Professor ABBOTT, and Mr. VAN DEN BROEK, Mr. BOSTON, Mr. TANGHE, Mr. SWINTON, and Mr. ERIKSEN.
Course 2 must be preceded by Course 1 in Engineering Mechanics.

3. Dynamics. Work and Energy. The use of velocity, acceleration and other diagrams in the studying of dynamic problems relating to machines. Nine sections. *Three hours.* Professor PATTERSON, Assistant Professor STEVENS, Mr. TANGHE, Mr. BOSTON, Mr. SWINTON, and Mr. ERIKSEN.
Course 3 must be preceded by Course 1 in Engineering Mechanics.

4. Hydromechanics. Pressure of Fluids. Flotation. Flow of water through pipes and orifices, over weirs, and in open channels. Five sections. *Two hours.* Mr. ORBECK, Mr. WISLER, Mr. SWINTON and Mr. ERIKSEN.
Course 4 must be preceded by Course 1 in Engineering Mechanics.

5. Testing Materials. A study of methods and results of laboratory investigations of the physical properties of engineering materials. *Two hours.* Mr. VAN DEN BROEK and laboratory assistant.
Course 5 must be preceded by Courses 1 and 2 in Engineering Mechanics.

SECOND SEMESTER

1. Statics, Centers of Gravity, Moments of Inertia. Twelve sections. *Four hours.* Professor PATTERSON, Assistant Professors STEVENS and FINCH, Mr. VAN DEN BROEK, Mr. TANGHE, Mr. KUESTERMANN, Mr. BOSTON, Mr. SWINTON and Mr. ERIKSEN.
Course 1 must be preceded by Course 3E in Mathematics and Course 1E in Physics.

2. Strength and Resistance of Materials, Fundamentals of Structural Design, Theory of the strength and stiffness of beams, girders, columns, shafts, etc. Seven sections. *Three hours.* Professor PATTERSON, Assistant Professors STEVENS and ABBOTT, Mr. TANGHE, Mr. VAN DEN BROEK, Mr. BOSTON, and Mr. ERIKSEN.

3. Dynamics. Work. Energy. Power. Moments of Inertia. Kinetics of machinery; brakes, governors, etc. Six sections. *Three hours.* Professor PATTERSON, Assistant Professor STEVENS, Mr. TANGHE, Mr. BOSTON, and Mr. SWINTON.

   Course 3 must be preceded by Course 1 in Engineering Mechanics.

4. Hydromechanics. Pressure of fluids; flotation; flow of water through pipes and orifices, over weirs, and in open channels. Nine sections. *Two hours.* Mr. ORBECK, Mr. WISLER, Mr. SWINTON, and Mr. ERIKSEN.

   Course 4 must be preceded by Course 1 in Engineering Mechanics.

5. Testing Materials. A study of methods and results of laboratory investigations of the physical properties of engineering materials. *Two hours.* Mr. VAN DEN BROEK, and laboratory assistant.

6. Strength of Materials. Testing. The elementary theory of the strength of ties, struts, beams, and shafts. Laboratory practice in commercial testing and investigation methods. *Three hours.* Mr. VAN DEN BROEK, and laboratory assistant.

   Course 6 must be preceded by Course 1 or 2 in Engineering Mechanics. It is an abridgment of the work covered in Courses 2 and 5 and may not be elected by any one who has passed, or intends to elect either of these courses.

CIVIL ENGINEERING

The work offered in this department includes Structural, Hydraulic, Transportation, Municipal, Sanitary, Highway, and Geodetic Engineering.

The Announcement of the College of Engineering should be consulted for information as to the sequence of courses.

FIRST SEMESTER

1. Drafting Room Practice. *Two hours.* Assistant Professor BAILEY, and Mr. SHEPPARD.

2. Theory of Structures. *Three hours.* Professor GRAM, Mr. BRINGHURST, and Mr. CISSEL.

2a. Design of Structures. *Two hours.* Mr. BRINGHURST and Mr. CISSEL.

3. Masonry. *Three hours.* Professor GRAM, and Mr. BRINGHURST.

5. Advanced Design of Steel Structures. *Three hours.* Mr. BRINGHURST.

6. Advanced Masonry and Foundations. *Two hours.* Professor GRAM.

10. Hydrology. *Three hours.* Professor KING, and Mr. WISLER.

11. Hydraulics. *Two hours.* Professor KING.

20. Railroad Location. *Two hours.* Professor RIGGS.

20a. Railroad Location (Drawing). *One hour.* Assistant Professor BAILEY, and Mr. SHEPPARD.

21. Railroad Construction. *Two hours.* Professor RIGGS.

26. Specifications and Contracts. *One hour.* Professor RIGGS.

30. Water Works. *Three hours.* Professors HOAD, and DECKER.

32. Sewerage. *Two hours.* Professor HOAD.

34. Sanitary Science. *One hour.* Professor HOAD.

40. Roads and Pavements. *Two hours.* Assistant Professor COX.

42. Highway Laboratory. *Two hours.* Assistant Professor COX.

60. Sanitary Engineering Research. Credit to be arranged. Professors HOAD, and DECKER.

63. Advanced Railway Design. *Three hours.* Professor RIGGS.

65. Structural Engineering Research. Credit to be arranged. Professor GRAM.

SECOND SEMESTER

1. Drafting Room Practice. *Two hours.* Assistant Professor BAILEY, and Mr. SHEPPARD.

2. Theory of Structures. *Three hours.* Professor GRAM, Mr. BRINGHURST, and Mr. CISSEL.

2a. Design of Structures. *Two hours.* Mr. BRINGHURST, and Mr. CISSEL.

3. Masonry. *Three hours.* Professor GRAM, and Mr. BRINGHURST.

4. Higher Structures. *Two hours.* Professor GRAM, and Mr. BRINGHURST.

5. Advanced Design of Steel Structures. *Three hours.* Mr. BRINGHURST.

6. Advanced Masonry and Foundations. *Two hours.* Professor GRAM.

7. Design of Reinforced Concrete Structures. *Three hours.* Professor GRAM, and Mr. BRINGHURST.

10. Hydrology. *Three hours.* Professor KING, and Mr. WISLER.

12. Development of Water Power. *Three hours.* Professor KING.

13. Administration of Water Resources. *Two hours.* Professor JOHNSTON.

14. Irrigation and Drainage. *Two hours.* Professors KING and JOHNSTON.

16. Design of Hydraulic Structures. *Three hours.* Professor KING, and Mr. WISLER.

18. Rivers and Harbors. *One hour.* Professor KING.

22. Railroad Maintenance. *Two hours.* Professor RIGGS.

23. Railroad Design. *Three hours.* Assistant Professor BAILEY.

26. Specifications and Contracts. *One hour.* Professor RIGGS.

27. Valuation and Estimating. *One hour.* Professors COOLEY and RIGGS.

31. Water Purification. *Two hours.* Professor HOAD.

32. Sewerage. *Two hours.* Professors HOAD and DECKER.

33. Sewage Disposal. *Two hours.* Professors HOAD and DECKER.

35. Sanitary Engineering Design. *Three hours.* Professors HOAD and DECKER.

36. Municipal Engineering. *Two hours.* Professor HOAD.

40. Roads and Pavements. *Two hours.* Assistant Professor COX.

41. Highway Engineering. *Two hours.* Assistant Professor COX.

42. Highway Laboratory. *Two hours.* Assistant Professor COX.

43. Highway Engineering Design. *One or two hours.* Assistant Professor COX.

60. Sanitary Engineering Research. Credit to be arranged. Professors HOAD and DECKER.

61. Irrigation and Drainage. *Two hours.* Professors KING and JOHNSTON.

62. Advanced Hydraulic Design. *Two hours* Professor KING.

63. Advanced Railway Design. *Three hours.* Professor RIGGS.

64. Hydraulic Engineering Research. Credit to be arranged. Professor KING.

65. Structural Engineering Research. Credit to be arranged. Professor GRAM.

MECHANICAL ENGINEERING

FIRST SEMESTER

1. Machine Drawing. *Two hours.* Mr. MICKLE and assistant.
2. Elements of Machine Design. *Three hours.* Assistant Professors WILSON, VERNER, and PAWLOWSKI, and Mr. MICKLE.
3. Heat Engines. *Four hours.* Professors ALLEN and BURSLEY, Assistant Professors FESSENDEN, VERNER, ROWEN, and WILSON, and Mr. BOSTON.
4. Hydraulic Machinery. *Three hours.* Professor ZOWSKI.
5. Thermodynamics. *Three hours.* Assistant Professor ROWEN.
6. Theory of Machine Design. *Four hours.* Assistant Professor GREINER.
7. Mechanical Laboratory. First Course. *Two hours.* Professor EMSWILER, and assistants.
8. Mechanical Laboratory. Second Course. *Two hours.* Professor EMSWILER, and assistants.
9. Power Plants. *Two hours.* Assistant Professor ROWEN.
10. Theory of Machine Movements. *Two hours.* Assistant Professors VERNER and FESSENDEN.
11. Steam Boilers. *Three hours.* Assistant Professor FESSENDEN.
13. Steam Turbines. *Three hours.* Professor EMSWILER.
15. Internal Combustion Engines and Gas Producers. *Three hours.* Assistant Professor GREINER.
17. Pumps and Compressors. *Three hours.* Professor ZOWSKI.
18. Heating and Ventilation. First Course. *Two hours.* Professor ALLEN.
20. Mechanical Handling of Materials. *Two hours.* Assistant Professor VERNER.

20*a*. Design of Hoisting and Conveying Machinery. *Three hours.* Assistant Professor VERNER.

22. Mechanical Laboratory. Advanced Course. *Two or three hours.* Professor EMSWILER.
23. Hydraulic Laboratory. Advanced Course. *Two or three hours.* Professor ZOWSKI.
24. Prime Movers. *Three hours.* Professor ALLEN.

[27. Estimating. *One hour.* Open only to graduates and seniors. Not given in 1916-1917.]

[28. Automatic Machinery. *Two hours.* Not given in 1916-1917.]

29. Gasoline Automobiles. *Three hours.* Professor FISHLEIGH.

31. Automobile Chassis. *Two hours.* Professor FISHLEIGH.

32. Automobile Testing. *Two hours.* Professor FISHLEIGH, and Mr. LAY.

33. Advanced Automobile Testing and Research. *Two or three hours.* Professor FISHLEIGH, and Mr. LAY.

35. Scientific Shop Management. *Three hours.* Professor BURSLEY.

36. Scientific Shop Management. Advanced Course. *Two or three hours,* as arranged. Professor BURSLEY.

37. Special Topics on the Internal Combustion Engine. *Two hours.* Assistant Professor GREINER.

SECOND SEMESTER

1. Machine Drawing. *Two hours.* Mr. MICKLE, and assistant.

2. Elements of Machine Design. *Three hours.* Assistant Professors WILSON, VERNER, and PAWLOWSKI.

3. Steam Engines and Other Heat Engines. *Four hours.* Professors ALLEN and BURSLEY, Assistant Professors FESSENDEN, VERNER, and WILSON.

4. Hydraulic Machinery. *Three hours.* Professor ZOWSKI.

5. Thermodynamics. *Three hours.* Assistant Professors FESSENDEN and ROWEN.

6. Theory of Machine Design. *Four hours.* Assistant Professor GREINER.

7. Mechanical Laboratory. First Course. *Two hours.* Professor EMSWILER, and assistants.

8. Mechanical Laboratory. Second Course. *Two hours.* Professor EMSWILER, and assistants.

9. Power Plants and Power Transmission. *Two hours.* Professor ALLEN.

9*a*, Design of Power Plants. *Three hours.* Assistant Professor FESSENDEN.

10. Theory of Machine Movements. *Two hours.* Assistant Professors VERNER and FESSENDEN.

11*a*. Design of Steam Boilers. *Three hours.* Assistant Professor FESSENDEN.

12. Steam Reciprocating Engines. *Two hours.* Assistant Professor FESSENDEN.

12*a*. Design of Steam Reciprocating Engines. *Three hours.* Assistant Professor FESSENDEN.

13. Steam Turbines. *Three hours.* Professor EMSWILER.

13*a*. Design of Steam Turbines. *Three hours.* Professor EMSWILER.

15. Internal Combustion Engines and Gas Producers. *Three hours.* Assistant Professor GREINER.

15*a*. Design of Internal Combustion Engines. *Three hours.* Assistant Professor GREINER.

16. Water Turbines. *Three hours.* Professor ZOWSKI.

16*a*. Design of Water Turbines. *Three hours.* Professor ZOWSKI.

17*a*. Design of Pumps and Compressors. *Three hours.* Professor ZOWSKI.

19. Refrigeration. *Two hours.* Assistant Professor ROWEN.

20. Mechanical Handling of Materials. *Two hours.* Assistant Professor VERNER.

20*a*. Design of Hoisting and Conveying Machinery. *Three hours.* Assistant Professor VERNER.

21*a*. Design of Machine Tools. *Three hours.* Professor MIGGETT.

22. Mechanical Laboratory. Advanced Course. *Two or three hours.* Professor EMSWILER.

23. Hydraulic Laboratory. Advanced Course. *Two or three hours.* Professor ZOWSKI.

25. Heating and Ventilation. Second Course. *Two hours.* Professor ALLEN.

25*a*. Design of Heating and Ventilating Systems. *Three hours.* Professor ALLEN.

[28*a*. Design of Automatic Machinery. *Two hours.* Not given in 1916-1917.]

29. Gasoline Automobiles. *Three hours.* Professor FISHLEIGH.

30*a*. Automobile Motor Theory and Design. *Three hours.* Professor FISHLEIGH.

31*a*. Automobile Chassis Design. *Two hours.* Professor FISHLEIGH.

32. Automobile Testing. *Two hours.* Professor FISHLEIGH.

33. Advanced Automobile Testing and Research. *Two or three hours.* Professor FISHLEIGH.

[34. Gyroscopic Action and Critical Speeds. *Two hours.* Not given in 1916-1917.]

35. Scientific Shop Management. *Three hours.* Professor BURSLEY.

36. Scientific Shop Management. Advanced Course. *Three hours.* Professor BURSLEY.

37. Special Topics on the Internal Combustion Engine. *Two hours.* Assistant Professor GREINER.

40. Advanced Thermodynamics. *Three hours.* Assistant Professor ROWEN.

ELECTRICAL ENGINEERING

BOTH SEMESTERS

1. (1A, 1B, 1) Courses discontinued.

2. Electrical apparatus and Circuits I. (Fundamentals). Recitations and laboratory work. *Four hours.* Professors PARKER and LOVELL, Assistant Professors MACKAVANAGH and SHEPPARD, Mr. EVANS, Mr. DAVIDSON, Mr. MOORE, Mr. ZUMBRO, and Mr. POMEROY.

   Prerequisites: Courses 1E and 2E in Physics and Course 1 in Engineering Mechanics.

3. Electrical Apparatus and Circuits II. (Theory). Recitations and laboratory work. *Four hours.* Assistant Professor MACKAVANAGH and Mr. DAVIDSON.

   Prerequisite: Course 2.

4. Electrical Apparatus and Circuits III. (Advanced Theory). Recitations and laboratory work. *Three hours.* Professor BAILEY, Mr. DAVIDSON, Mr. MOORE, and Mr. ZUMBRO.

   Prerequisite: Course 3.

   Note:—These courses are planned on the "concentric system" whereby a student may in Course 2 rapidly survey the general field of alternating and direct current theory and practice as concerning both apparatus and circuits. While elementary the course is rigorous in the application of physical concepts to an understanding of principles and applications. Courses 3 and 4 review the subject matter of Course 2 in detail, Course 3 giving especial emphasis to direct current machinery, the alternator and the transformer, Course 4 to the induction, synchronous and other types of alternating current motors and to the synchronous (so-called "rotary") converter.

   Students of high proficiency may, after completing Course 2, take certain of the specialized courses described in the following paragraphs, although those who will take Course 3 are advised, and electrical students are required, to complete Course 3 before taking the specialized courses with the exception of 5, 7, 30, 31, 35, 36, which may be taken by electrical students simultaneously with Course 3.

5. Design of Electrical Machinery and Appliances. Lectures, recitations, and drawing. *Four hours.* Professor BAILEY and Mr. MOORE.

   Prerequisite: Course 3.

7. Illumination and Photometry. Lectures, recitations, and laboratory work. *Two hours.* Professor HIGBIE and Mr. DAVIDSON.

   Prerequisite: Course 2.

11. Electric Generating Stations and Sub-stations. Lectures and recitations. *Two hours.* Professor PARKER and Professor LOVELL.
Prerequisite: Course 3.

12. Transmission and Distribution of Electricity. Lectures and recitations. *Three hours.* Professors PARKER and LOVELL.
Prerequisite: Course 3.

13. Telephones. Recitations and laboratory work. *Four hours.* Assistant Professor SHEPPARD, Mr. EVANS, and Mr. ZUMBRO.
Prerequisite: Course 3.

18. Research Work. Hours to be arranged. Various members of the Department Faculty.
May be elected only by permission of the Head of the department.

FIRST SEMESTER ONLY

7A. Building Illumination. Lectures and recitations. *One hour.* Professor HIGBIE.
Prerequisite: Course 2.

32. Municipal Lighting. Lectures and recitations. *Two hours.* Professor HIGBIE.
Prerequisite: Course 2.

33. Industrial Electrical Engineering. Lectures and recitations. *Two hours.* Professor LOVELL.
Prerequisite: Course 3.

35. Electric Meters, Relays and Commercial Measuring Instruments. Lectures, recitations, and laboratory work. *Two hours.* Assistant Professor MACKAVANAGH.
Prerequisite: Course 3.

SECOND SEMESTER ONLY

6. Design of Electrical Machinery and Appliances. Lectures, recitations, and drawing. *Two hours.* Professor BAILEY and Mr. MOORE.
Prerequisite: Course 5.

6A. (An extended form of Course 6). *Four hours.* Professor BAILEY and Mr. MOORE.

8. Electric Railways. Lectures and recitations. *Two hours.* Associate Professor LOVELL.
Prerequisite: Course 3.

10. Advanced Reading on Theory of Electrical Machinery. Lectures and reading. *Two hours.* Professor BAILEY.
Prerequisite: Course 3.

15. Advanced Lighting. Lectures, recitations, and laboratory work. *Two hours.* Professor HIGBIE.
Prerequisite: Course 7.

16. Advanced Telephones. Lectures, recitations, and laboratory work. *Three hours.* Assistant Professor SHEPPARD.
Prerequisite: Course 13.

19. Design of Electrical Power Plants and Transmission Systems Lectures and design problems. *Two hours.* Professors PARKER and LOVELL.
Prerequisite: Either Course 11 or Course 12.

20. Electrical Telegraph and Railway Signals. Lectures, recitations, and laboratory work. *Three hours.* Assistant Professor MACKAVANAGH.
Prerequisite: Course 2.

21. Design of Electric Communication Plants. *Two hours.* Assistant Professor SHEPPARD.
Prerequisite: Course 13.

22. Wireless Telegraphy and Telephony. Lectures, recitations, and laboratory work. *Two hours.* Assistant Professor SHEPPARD
Prerequisite: Courses 3 and 13.

25. Electrical Engineering Seminary. *Two hours.* Professor BAILEY and Mr. MOORE.
(By invitation only.)

27. Advanced Reading on Theory of Electric Circuits. Lectures and reading. *Two hours.* Professor LOVELL.
Prerequisite: Course 3.

30. Electrical Auxiliaries for Automobiles. Lectures and recitations. *One hour.* Professor BAILEY.
Prerequisite: Course 2.

31. Wiring Systems. Lectures, recitations, and problems. *Two hours.* Professor HIGBIE.
Prerequisite: Course 3.

36. Rates and Cost Analysis. Lectures and recitations. *One hour.* Professor PARKER.
Prerequisite: Course 2. Open to seniors only.

CHEMICAL ENGINEERING

FIRST SEMESTER

1. Engineering Materials. Lectures and recitations. *Three hours.* Dr. LAIRD and Mr. UPTHEGROVE.
Prerequisite: Course 2E in Chemistry.

2. Fuels and their Utilization. Lectures and recitations. *One hour.* Assistant Professor BADGER.
Prerequisite: This course must be preceded or accompanied by Course 1 in Chemical Engineering and preceded by Course 1E in Physics.

3. Building Materials. (Non-metallic). Lectures and recitations. *Two hours.* Dr. LAIRD.
Prerequisite: Course 1 in Chemical Engineering, Course 8 or 8E in Chemistry and 1E in Physics.

5. Chemical Technology of Carbon Compounds. Lectures and recitations. *Four hours.* Professor A. H. WHITE, and Assistant Professor RUE.
Prerequisite: Course 2 and 4 in Chemical Engineering and Course 7 and 7*a* in Chemistry.

6. Metallurgy of Iron and Steel. Lectures and recitations. *Two hours.* Assistant Professor A. E. WHITE.
Prerequisite: Courses 1 and 2 in Chemical Engineering or Course 1 in Chemical Engineering and Course 3 in Mechanical Engineering.

8. Metallography. Lectures and laboratory work. *Two hours.* Assistant Professor A. E. WHITE and Mr. UPTHEGROVE.
Prerequisite: This course must be preceded or accompanied by Course 6 in Chemical Engineering and preceded by Course 5 in Chemistry or Course 2 or 6 in Engineering Mechanics.

9. Technical Examination of Gas and Fuel. *Two hours.* Assistant Professor BADGER.
Prerequisite: Course 2 in Chemical Engineering.

10. Methods of Assaying Gold and Silver Ores. *Two hours.* Dr. LAIRD.
Prerequisite: Course 1 in Chemical Engineering, and Course 5 in Chemistry.

11. Current Technical Journals. *Two hours.* Assistant Professor RUE.
Prerequisite: Four hours work in Chemical Engineering and German 4 or French 4. German 9 is recommended.

12. Special Problems. Largely laboratory work. *Three to eight hours.* Professors WHITE and WARE, Assistant Professors A. E. WHITE, BADGER, RUE, and Dr. LAIRD.
Prerequisite: Courses 1, 2, and 4 in Chemical Engineering, and Chemistry 28, with Course 5 in Chemical Engineering, and Chemistry 7 and 7*a* in addition if the subject involves organic chemistry. A reading knowledge of French or German (preferably German) is also required.

13. Evaporation, Distillation, Filtration, and Transportation of Liquids on the Manufacturing Scale. *Two hours.* Assistant Professor BADGER.
Prerequisite: Courses 1, 2, and 4 in Chemical Engineering.

15. Seminary. Reading and reports on selected subjects. *Two hours.* Professor A. H. WHITE.
Open only to graduates and seniors who receive special permission. A reading knowledge of German or French is required.

17. Ore Dressing. Lectures and recitations. *Two hours.* Assistant Professor A. E. WHITE.
Prerequisite: Course 6. Open only to seniors and graduate students. A knowledge of Mineralogy and Geology is very desirable.

18. Metals and Alloys. Class and laboratory work. *Three to five hours.* Assistant Professor A. E. WHITE.
Prerequisite: This course must be preceded by Course 6 or 7 and preceded or accompanied by Course 8 in Chemical Engineering.

19. Bituminous Paving Materials. Largely laboratory work. *Two hours.* Assistant Professor RUE.
Prerequisite: This course must be preceded or accompanied by Course 5 in Chemical Engineering, or Course 40 in Civil Engineering.

21. Special Laboratory Work. *Five to eight hours.* This is research work along special lines. These courses are open only to graduates and seniors who receive special permission.
a. The Constitution of Steel. Professor CAMPBELL.
b. Hydraulic Cements. Professors CAMPBELL and WHITE.
c. Gas Manufacture and Purification. Professor WHITE.
It should be preceded or accompanied by Course 16.
d. Paints and Varnishes. Professor WHITE.
e. Pulp and Paper. Assistant Professor RUE.

SECOND SEMESTER

1. Engineering Materials. Lectures and recitations. *Three hours.* Dr. LAIRD and Mr. UPTHEGROVE.
Prerequisite: Course 2E in Chemistry.

2. Fuels and their Utilization. Lectures and recitations. *One hour.* Assistant Professor BADGER.
Prerequisite: This course must be preceded or accompanied by Course 1 in Chemical Engineering and preceded by Course 1E in Physics.

4. Salts, Acids, and Alkalies. Lectures and recitations. *Two hours.* Professor A. H. WHITE.
Prerequisite: Course 1 in Chemical Engineering, Course 8 or 8E in Chemistry, and 2E in Physics.

7. Non-ferrous Metals. Lectures and recitations. *Two hours.* Assistant Professor A. E. WHITE.
   Prerequisite: Courses 1 and 2 in Chemical Engineering or Course 1 in Chemical Engineering and Course 3 in Mechanical Engineering.

8. Metallography. Lectures and laboratory work. *Two hours.* Assistant Professor A. E. WHITE and Mr. UPTHEGROVE.
   Prerequisite: This course must be preceded or accompanied by Course 6 in Chemical Engineering and preceded by Course 5 in Chemistry or Course 2 or 6 in Engineering Mechanics.

9. Technical Examination of Gas and Fuel. *Two hours.* Assistant Professor BADGER.
   Prerequisite: Course 2 in Chemical Engineering.

10. Methods of Assaying Gold and Silver Ores. *Two hours.* Dr. LAIRD.
    Prerequisite: Course 1 in Chemical Engineering, and Course 5 in Chemistry.

11. Current Technical Journals. *Two hours.* Assistant Professor RUE.
    Prerequisite: Four hours work in Chemical Engineering and German 4 or French 4. German 9 is recommended.

12. Special Problems. Largely laboratory work. *Three to eight hours.* Professors WHITE and WARE, and Assistant Professors WHITE, BADGER, and RUE, and Dr. LAIRD.
    Prerequisite: Courses 1, 2, and 4 in Chemical Engineering, and Chemistry 28, with Course 5 in Chemical Engineering, and Chemistry 7 and 7*a* in addition if the subject involves organic chemistry. A reading knowledge of French or German (preferably German) is also required.

14. Machinery and Processes for Conveying, Drying, Calcining, and Grinding. Lectures and recitations. *Two hours.* Professor WARE.
    Prerequisite: Courses 1, 2, and 6 in Chemical Engineering.

16. Gas Manufacture. Lectures and recitations. *Two hours.* Professor WHITE.
    Prerequisite: Course 5 in Chemical Engineering, and Course 3 in Mechanical Engineering.

18. Metals and Alloys. Class and laboratory work. *Three to five hours.* Assistant Professor WHITE.
    Prerequisite: This course must be preceded by Course 6 or 7 and preceded or accompanied by Course 8 in Chemical Engineering.

19. Bituminous Paving Materials. Largely laboratory work. *Two hours.* Assistant Professor RUE.
    Prerequisite: This course must be preceded or accompanied by Course 5 in Chemical Engineering, or Course 40 in Civil Engineering.

20. Technology of Pulp and Paper. Lectures and recitations. *Two hours.* Assistant Professor RUE.
    Prerequisite: Course 5 in Chemical Engineering.

21. Special Laboratory Work. *Five to eight hours.* This is research work along special lines. These courses are only open to graduates and seniors who receive special permission.
    a. The Constitution of Steel. Professor CAMPBELL.
    b. Hydraulic Cements. Professors CAMPBELL and WHITE.
    c. Gas Manufacture and Purification. Professor WHITE.
    It should be preceded or accompanied by Course 16.
    d. Paints and Varnishes. Professor WARE.
    e. Pulp and Paper. Assistant Professor RUE.

22. Ceramics. *Two hours.* To be arranged. Dr. LAIRD.
    Prerequisites: Course 3 in Chemical Engineering, Course 8E in Chemistry and Course 2E in Physics.

NAVAL ARCHITECTURE AND MARINE ENGINEERING

FIRST SEMESTER

1. Naval Architecture. Structural Design. Lectures and recitations. *One hour.* Professor SADLER.

3. Naval Architecture. Stability and rolling of ships and preliminary design. Lectures and recitations. *Three hours.* Professor SADLER.

5. Naval Architecture. Mould loft and structural drawing. *Two hours.* Professor BRAGG.

6. Naval Architecture. Ship drawing and design. *Two hours.* Professor BRAGG.

8. Marine Boilers. Lectures and recitations. *Two hours.* Professor BRAGG.

9. Marine Engines. Lectures and recitations. *Two hours.* Professor BRAGG.

10. Marine Boiler Design. *Two hours.* Professor BRAGG.

SECOND SEMESTER

2. Naval Architecture. Ship calculations and strength. Lectures and recitations. *Three hours.* Professor BRAGG.

4. Naval Architecture. Resistance and Propulsion of ships, and screw propellers. Lectures and recitations. *Three hours.* Professor SADLER.

5. Naval Architecture. Mould loft and structural drawing. *Two hours.* Professor BRAGG.

7. Naval Architecture. Ship drawing and design. *Three hours.* Professors SADLER and BRAGG.

9. Marine Engines. Lectures and recitations. *Two hours.* Pro fessor BRAGG.

11. Marine Engine Design. *Two or three hours.* Professor BRAGG.

BOTH SEMESTERS

Primarily for Graduates.

12. Experimental Tank Work. *One, two, or three hours.* Professor SADLER.

13. Ship and Engine Specifications. *One or two hours.* Professor SADLER.

14. Pumping and Ventilation. *One hour.* Professor SADLER.

15. Naval Architecture. Advanced reading. *Three hours.* Professor SADLER.

16. Advanced Drawing. *Three to five hours.* Professor SADLER.

17. Marine Engines. Advanced reading. *Three hours.* Professor BRAGG.

18. Marine Engines. Advanced drawing and design. *Three to five hours.* Professor BRAGG.

AERONAUTICS

1. Theory of Aviation. Lectures and recitations. *Two hours.* Professor SADLER, and Assistant Professor PAWLOWSKI.

This course comprises the general discussion of aerodynamics, power necessary for flight, equilibrium of aeroplanes, automatic stability.

2. Propulsion of Aeroplanes. Lectures and recitations. *One hour.* Assistant Professor PAWLOWSKI.

In this course the general theory and design of propellers and motors used for aviation purposes are discussed.

3. Aeroplane Design. Lectures and drawing. *Three hours.* Assistant Professor PAWLOWSKI.

This course includes the investigation of the design of the aeroplane from the aeronautical and strength standpoints. The strength and design of all the details are discussed and a completed design prepared.

COLLEGE OF ARCHITECTURE

EQUIPMENT

The College of Architecture is housed in commodious quarters on the main floor of the Engineering building, immediately adjoining the library. The drafting rooms are well lighted and provided with drafting tables of special design. On the walls are hung a number of valuable original competition and measured drawings. The free-hand drawing room is situated on the top floor at the north end of the Engineering building. It is about sixty feet square, is lighted by means of windows and a north skylight and is fully equipped for the instruction in free-hand drawing, pen and ink, water color and drawing from life. There is a comprehensive collection of plaster casts of decorative and architectural form, pottery and textiles for painting from still life and several original drawings in pencil, color and pencil, pen and ink by D. A. Gregg, H. G. Ripley, and others. The architectural library is housed with the engineering library. It consists of a large amount of carefully selected reference and illustrative materials, and is made up of the standard books, about 1800 volumes, portfolios of plates, photographs, and about 9000 lantern slides. The leading architectural journals are also kept on file.

PROGRAMS OF STUDY

Three four-year curricula or programs of study are offered. In each of these provision is made for the essentials of a liberal education, — language, mathematics, science, and fine arts, — for cultural electives, and for as much specific training in drawing, architectural design and history, construction, and building equipment as seems permissible during a period of four years.

Program I provides a general curriculum; in Program II, architectural design receives greater emphasis; while in Program III, advanced construction and the mechanical equipment of buildings are given a relatively large amount of time, particularly during the fourth year. The first year is practically identical for the four-year programs while the students in all these groups share the same classes in architecture during the first three years.

There is also a two-year program for special students, open under certain conditions to experienced architectural draftsmen; college graduates may also enter as special students.

A certificate is awarded upon the completion of the two-year program.

SCHOLARSHIPS IN ARCHITECTURE

There are at present two scholarships for students of architecture, intended primarily for those just entering college. Preference is given to experienced architectural draftsmen and to students showing artistic ability.

NATURE OF COURSES

Architectural Design.—In the courses in Architectural Design the students work out, in the drafting room, designs for a great variety of buildings, ranging from a small house to large public buildings, problems of a practical character being interspersed with more ideal ones. The aim throughout these courses, of which there are eight offered, is to develop the imagination, creative power, ability to work out the organism of a building and skill in the clear and artistic presentation of the drawings.

The courses in Architectural Design are grouped as follows: Courses 4 and 5, Elementary Design; Courses 6 and 7, Intermediate Design; Courses 8, 9, and 10, Advanced Design; Courses 30 and 31, Graduate Design. Students must complete the requirements of one group before proceeding to the next. Students of average ability are able to complete this work in the usual number of years while those of unusual ability may do so in a shorter period.

In the course in *Allied Arts of Design,* designs are made for a piece of furniture, decorative glass, metal and mosaic and of other objects or features commonly used in connection with architecture.

Architectural Construction.—The work in construction continues through three years and is conducted by means of lectures, quizzes, text-books, visits to buildings, and the preparation of working drawings. The character of building materials, their practical and artistic possibilities and the methods of present building practice are studied. The drawing work of the courses in construction begins with the making of working drawings of a small building. This includes the framing plans of the floors, walls, and roof, and full-size details of some essential portions. This is followed by the working drawings for a larger building of heavy construction and involves foundations, masonry walls, piers, columns, floors, roof, and details. This in turn, is followed by steel and re-inforced concrete construction, in the course of which girders, columns, trusses, and other structural work of a high, fire-proof building are designed. A course in the testing of materials is given in the senior year. Specifications are discussed in connection with the work in construction.

The courses in structural mechanics, strength and resistance of materials, testing of materials, and advanced construction or structural design are studied under specialists and given partly by the College of Architecture and partly by the departments of Engineering Mechanics and Civil Engineering.

Heating and Ventilation.—The course in heating and ventilation of buildings is given by the department of Mechanical Engineering.

Building Illumination is a special course given for architectural students by the department of Electrical Engineering. In the course in *Building Sanitation* the principles are studied which should guide the design and installation of drainage and plumbing systems.

History of Architecture.—In these courses the technical and artistic development of the art of building is traced from earliest times to the present day. The causes and influences which moulded the various modes of building are analyzed and wherever possible demonstrated by means of the stereopticon. Many of the important buildings of the world are fully illustrated and critically studied, the student thus gaining an appreciation of the finest achievements of his art. Not only are the buildings studied in their larger aspects, but also in many of their details of construction, form, and detail. Historic ornament is taken up with the architecture of the various periods, as also are decorative sculpture and color. Four courses of lectures are given, extending over two years. Two lectures per week are given in each course and one quiz.

In adidtion to the above all architectural students take one or more courses in the history of art given by the department of Fine Arts in order to acquaint them with the development and masterpieces of painting and sculpture.

Freehand Drawing.—Pen and Ink, Water Colors.—Considerable attention is devoted to this subject by students of Architecture. This is particularly true of Group II in which freehand drawing is carried on throughout the four years. Ten special courses are given for architectural students. The students begin drawing from simple geometrical solids involving the accurate representation of form in line and light and shade; simple decorative, natural and architectural, forms are next drawn, after which portions of the figures, the hand, foot, head, etc., are drawn from cast (Elementary Antique); then the entire figure is drawn from cast (Advanced Antique), after the satisfactory completion of which follows drawing from the living model.

Throughout this discipline, in the observation and artistic representation of line, form, proportion, light and shade, the aim is to develop in the student the power of free artistic expression. The student is advanced as rapidly as his progress warrants. The pencil, charcoal, and monochrome wash are used. A special course is provided for Architectural students in rendering in pen and ink. The instruction considers the character of such drawings necessary for reproduction. A course in painting in water color from still life is also required of students in Architecture, but may not be taken without first completing Courses 21 and 22 in Drawing, or their equivalent. Rendering in wash and color is carried on throughout the courses in design.

Clay Modeling.—Some modeling is required of students in Architecture to supplement the training in drawing and design. The instruction aims to inculcate a better appreciation of architectural form and ornament.

REQUIREMENTS FOR GRADUATION

The Degree of Bachelor of Science in Architecture

To earn the degree of Bachelor of Science in Architecture, the student must secure *one hundred and forty hours of credit** in a prescribed curriculum, as given below, four hours of which must be earned by four months' practical experience in an architect's office. A time limit is not set, but four years are usually needed for the work required for the degree.

Candidates for degrees in Architecture and in Architectural Engineering enroll as Architectural students upon entering the University. They elect one of the three four-year programs of study, which are substantially identical for the first year.

HOURS CREDIT REQUIRED IN THE THREE FOUR-YEAR PROGRAMS AND IN THE TWO-YEAR PROGRAM FOR SPECIAL STUDENTS IN ARCHITECTURE.

One hour of credit represents ordinarily about three hours of actual work during each week of one semester.

ARCHITECTURE:	I.	II.	III.	Spl.
Elements of Architecture	3	3	3	3
Architectural design	31	39	15	13
Allied arts design	3	3	0	0
History of architecture	8	8	8	8
Office work	4	4	4	0
CONSTRUCTION:				
Structural mechanics	7	6	7	0
Roofs and bridges, and framed structures	0	0	5	0
Construction (elementary)	5	5	5	5
Structural design (advanced)	4	4	2	0
Masonry and reinforced concrete	0	0	5	0
Testing materials	0	0	2	0
Chemistry of materials	0	0	3	0
Surveying	0	0	2	0

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* One credit hour indicates for each week during one semester one recitation or lecture with two hours of preparation or three hours of drawing on laboratory work.

BUILDING EQUIPMENT:				
Building sanitation	1	1	1	0
Building illumination	1	0	1	1
Heating and ventilation	2	2	2	2
Heat engines	0	0	4	0
DRAWING:				
Freehand drawing, water color, and pen and ink	13	15	6	8
Descriptive geometry and shade and shadows	3	3	3	3
Stereotomy and perspective	2	2	2	2
SCIENCE:				
Mathematics	13	4	18	0
Physics	8	4	10	0
Chemistry	0	0	5	0
Geology or Mineralogy	3	0	3	0
LANGUAGE:				
English	6	6	6	0
French or German	12	12	12	0
GENERAL:				
Business Administration	3	3	0	0
History of art	3	6	0	3
Law of Contracts	2	0	2	0
Landscape design	0	3	0	0
Elective	1	4	4	17
	140	140	140	66

ARCHITECTURE

FIRST SEMESTER

1. Elements in Architecture. ***Three hours.*** Professor LORCH, Mr. BENNETT, and Mr. UNDERWOOD.

The elements of architectural design and construction. The plan, wall, roof; lintel, arch; openings; architectural form and principles of design. Lectures, drawing exercises, and rendering in wash. This course must precede all architectural design courses.

Architectural Design

In the following courses in Architectural Design problems are assigned to be worked out in the drafting-room. Lectures are given from time to time bearing on the type of building then being designed. Study of the requirements of various classes of buildings and of the artistic possibilities of building materials; training of the student in composition in plan, section, elevation, and perspective, in accurate draftsmanship and rendering in line, wash, and color.

Courses 4 and 10 inclusive constitute a progressive series of problems in architectural planning and design, advancing from the small building to the more important classes of buildings and to the group problem. The courses must be taken in the order given.

4. Architectural Design. *Three hours.* Assistant Professor ROBINSON.

The orders and problems in which they are employed.

This course must be preceded by Drawing 4*a* and 21, and Architecture 1.

5. Architectural Design. *Four hours.* Professors LORCH and BOYNTON, and Assistant Professor ROBINSON.

The small ensemble. Course 5 should be preceded by Drawing 5*a* and 22 and by Courses 4 and 21 in Architecture.

6. Architectural Design. *Four hours.* Professor BOYNTON.

This course is a continuation of Course 5, and should be preceded by Architecture 5 and 22.

7. Architectural Design. *Six hours.* Professor ROUSSEAU.
This course must be preceded by Architecture 6.

8. Architectural Design. *Six hours.* Professor ROUSSEAU.
This course must be preceded by Architecture 7.

9, 10. Architectural Design. *Eight hours.* Professor ROUSSEAU.
These courses must be preceded by Architecture 8.

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11. History of Architecture; Ancient. *Two hours.* Professor LORCH.

The buildings of Egypt, Assyria, Persia, Greece, and Rome. Their historical conditions, building materials and methods, planning and design, and their sculptured and painted decoration and ornament will be studied by means of illustrated lectures, conferences, drawing exercises, and research.

13. History of Architecture. The Gothic Architecture of France, England, Germany, Italy, and Spain. Illustrated lectures, conferences, drawing exercises, and research. *Two hours.* Assistant Professor ROBINSON.

15. General Course in the History of Architecture. *Two hours.*

The aim of this course is to give students seeking a liberal culture a servey of the development of the art of building. The temples, cathedrals, palaces, and other characteristic monuments of the ancient, medieval, renaissance, and modern styles, their design, sculpture, and painted decorations will be studied by means of lectures illustrated by the stereopticon, and collateral reading. This course is open to all students in the University, but cannot be counted towards graduation in architecture.

For students of art and archaeology desiring a more intensive study of the evolution of architecture, Courses 11, 12, 13, and 14 are recommended. (Not given in 1916-197.)

18. Architectural Composition. *One hour.*
This course supplements the courses in architectural design by a series of illustrated lectures.

19. Architectural Mechanics. Statics. Stresses in Simple Trusses. *Three hours.* Assistant Professor McCONKEY.

20. Architectural Mechanics. Advanced problems in statics. *Three hours.* Assistant Professor McCONKEY.

22. Building Construction. Lectures, conferences, text-books, drawings, and visits to buildings. Building materials and processes; working drawings; masonry construction; building stones, cements, concrete and brick, terra cotta, working drawings. *Three hours.* Lectures: Assistant Professor McCONKEY, Drawing: Professor BOYNTON, and Mr. UNDERWOOD.
This course must be preceded by Drawing 4*a*.

24. Building Sanitation. *One hour.* Assistant Professor McCONKEY.

Free-Hand Drawing and Painting

These courses are required of architectural students, but may be elected by others. They are to be elected as Drawing 21, 22, etc.

21 & 22. Elementary Free-Hand Drawing. *Two hours.* Mr. MAKIELSKI, Mr. BARNES, Miss SNELGROVE.

23. Drawing of Decorative Form. *Two hours.* Mr. BARNES.

24. Painting in Water Color from Still Life. *Two hours.* Mr. BARNES.

25 & 26. Drawing from the Antique. *Two hours.* Mr. MAKIELSKI.

27 & 28. Drawing from Life. *Two hours.* Mr. MAKIELSKI.

30. Painting from Still Life. *Two hours.* Mr. BARNES.

SECOND SEMESTER

1. Elements of Architecture. *Three hours.* Professor LORCH, Mr. BENNETT, and Mr. UNDERWOOD.
The elements of architectural design and construction. The plan, wall, roof; lintel, arch; openings; architectural form and principles of design. Lectures, drawing exercises, and rendering in wash.
This course must precede all architectural design courses; it should be preceded by Course 1 and must be preceded by Drawing 4*a* and Architectural Drawing 21.

Architectural Design

In the following courses in Architectural Design problems are assigned to be worked out in the drafting-room. Lectures are given from time to time bearing on the type of building then being designed. Study of the requirements of various classes of buildings and of the artistic possibilities of building materials; training of the student in composition in plan, section, elevation, and perspective, in accurate draftsmanship and rendering in line, wash, and color.

Courses 4 to 10 inclusive constitute a progressive series of problems in architectural planning and design, advancing from the small building to the more important classes of buildings and to the group problem. The courses must be taken in the order given.

4. Architectural Design. *Three hours.* Assistant Professor ROBINSON, and Mr. ——————.
The orders and problems in which they are employed. This course must be preceded by Drawing 4*a* and Architectural Drawing 21.

5. Architectural Design. *Four hours.* Professor BOYNTON.
The small ensemble. Course 5 should be preceded by Drawing 5*a*, and 22, and by Courses 4 and 21 in Architecture.

6. Architectural Design. *Four hours.* Professors BOYNTON and ROUSSEAU.
This course is a continuation of Course 5, and must be preceded by it and by Architecture 22.

7. Architectural Design. *Six hours.* Professor ROUSSEAU.
This course must be preceded by Course 6.

8. Architectural Design. *Six hours.* Professor ROUSSEAU.
This course must be preceded by Course 7.

9, 10. Architectural Design. *Eight hours.* Professor ROUSSEAU.
These courses must be preceded by Course 8.

12. History of Architecture. The Early Christian, Byzantine, and Romanesque Architecture of Italy, Byzantium, Central Syria, France, and Germany, and Sassanian and Mohammedan Architecture. The historical conditions, building materials, and methods, planning and design, and the sculptured and painted decoration and ornament will be studied by means of illustrated lectures, conferences, drawing exercises, and research. *Two hours.* Professor LORCH.

14. History of Architecture. The Renaissance Architecture of Italy, France, England, Germany, and Spain, the Classic Revival, and Architecture in the United States. Illustrated lectures, conferences, drawing exercises, and research. *Two hours.* Assistant Professor ROBINSON.

17. The Allied Arts of Design. Lectures, research, and exercises in design. *Three hours.* Professor LORCH.
Ornament, mural painting, decorative sculpture, furniture, metalwork, glass, ceramics, and textiles.

19. Architectural Mechanics. Statics. Stresses in Simple Trusses. *Three hours.* Assistant Professor McCONKEY.

21. Building Construction. Lectures, conferences, text-books, drawings, and visits to buildings. *Two hours.* Lectures: Assistant Professor McCONKEY. Drawing: Professor BOYNTON and Mr. UNDERWOOD.
Building materials and processes; primarily wood construction; working drawings.
This course must be preceded by Drawing *4a*.

23. Building Construction. *Four hours.* Assistant Professor McCONKEY.
Primarily steel construction; the plate girder; wood and steel trusses; a steel framed building. Conferences, working drawings.
This course is for students in Group I in Architecture and must be preceded by Courses 1 and 6 in Engineering Mechanics and Architecture 21 and 22.

25. Architectural Details. Lectures and drawing. *Two hours.* Professor BOYNTON.
This course must be preceded by Architecture 6.

26. Building Construction. Conferences, working drawings, visits, to buildings. *Four hours.* Assistant Professor McCONKEY.
Steel and fireproof construction.
This course is for students in Program II in Architecture and must be preceded by Courses 19 and 20 in Architectural Mechanics and Architecture 21 and 22.

31. Architectural Design. *Six hours.* Professor ROUSSEAU.

Free-Hand Drawing and Painting

These courses are required of architectural students, but may be elected by others.

21 & 22. Elementary Free-Hand Drawing. *Two hours.* Mr. MAKIELSKI, Mr. KIMBALL, assisted by Miss SNELGROVE.

23. Drawing of Decorative Form. *Two hours.* Mr. BARNES.

24. Painting in Water Color from Still Life. *Two hours.* Mr. BARNES.

25 & 26. Drawing from the Antique. *Two hours.* Mr. MAKIELSKI.

27 & 28. Drawing from Life. *Two hours.* Mr. MAKIELSKI.

Medical School*

A special announcement giving further information in regard to this School is published annually. For copies of this Announcement, or for other information relating to the School, address Dr. Charles W. Edmunds, Secretary of the Medical School, Ann Arbor, Michigan.

The Medical School, for which provision was made in the legislative act by which the University was organized in 1837, was opened for students in 1850. The college year was lengthened from six to nine months in 1877. The course was lengthened to three years in 1880, and to four years in 1890.

The academic year extends from the Tuesday preceding the first Thursday in October to the last Thursday in June (October 2, 1917, to June 27, 1918). The lectures continue until the middle of June. The examinations are then begun, and concluded in time for the Commencement exercises.

For the summer session of this School, see a subsequent chapter.

REQUIREMENTS FOR ADMISSION

The following will be admitted to the Medical School as candidates for the Degree of Doctor of Medicine:

I. Graduates of the College of Literature, Science, and the Arts of this University, or of collegiate departments of other universities, or of approved colleges and scientific schools, provided they show evidence of having an acquaintance with Latin, and a fair reading knowledge of German or French, and can present credentials showing that they have had a year of collegiate work in Biology (Zoölogy and Botany), Chemistry (including Organic Chemistry) and Physics (including laboratory). Applicants holding post-graduate degrees, namely, A.M., M.S., Ph.D., and D.Sc., are subject to the same regulations.

II. Students registered on the combined curriculum in Letters and Medicine offered in this University, and who have followed this curriculum as outlined, may enroll in the Medical School after having obtained 67 hours (B.S. and M.D. degrees) in the College of Literature, Science, and the Arts, or 90 hours (A.B. and M.D. degrees), if they meet the other requirements. (See combined Curricula in Letters and Medicine).

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* Hitherto known as the Department of Medicine and Surgery.

III. Matriculate candidates for the bachelor's degree (a) of the College of Literature, Science, and the Arts of this University, and (b) of the collegiate department of other universities, and of approved colleges and scientific schools, who can present evidence of being graduates of an approved high school, and in addition thereto can bring from the Dean of the College of Literature, Science, and the Arts of this University a statement showing that they have completed the equivalent of 60 hours of credit in that College will be admitted in case their credentials show an acquaintance with Latin and a fair reading knowledge of either German or French, and a year of collegiate work in Biology (Zoölogy and Botany), Physics, (including laboratory), and Chemistry, including Organic Chemistry.

No student therefore will be admitted to the school who has not completed two years of college work, in addition to graduating from an approved High School, or its equivalent.

In order to meet the requirements in Latin the applicant should have studied the language for two years and should have covered Latin grammar and at least four books of Caesar or their equivalent.

The requirement in German or French is met by two years of school work, for one not born to the language.

Applicants who are deficient in both German and French, but who fulfill the requirements in other subjects, may be admitted conditionally on the understanding that the condition be removed before the beginning of the second year.

The requirement in College Biology (Botany and Zoölogy) is absolute, and no entrance condition in this subject can be allowed.

Applicants who do not meet in full the requirements in Physics may enter the Summer Session preceding or following their first year of residence, and thus make up their deficiency, but the requirements in this subject must be met before the beginning of the second year.

Unless the applicant meets in full the entrance requirements in Chemistry he will not be able to carry the full work of the freshman year.

COMBINED CURRICULA IN LETTERS AND MEDICINE

A.B. and M.D.

Students desiring to obtain the degrees of Bachelor of Arts in the College of Literature, Science, and the Arts, and the Doctor of Medicine in the Medical School, may, by enrolling on the Combined Curriculum in Letters and Medicine, shorten from eight years to seven the time required to earn the two degrees. This privilege is open only to students who throughout their course maintain a uniform record of good scholarship. The work is under the direction of a

Committee of five members representing the College of Literature, Science, and the Arts, and the Medical School. With the consent of the Committee in charge, a candidate for the degree of Bachelor of Arts, who has been a student in the College of Literature, Science, and the Arts for at least one year, and has 90 or more hours to his credit, of which at least 30 hours have been earned in the College of Literature, Science, and the Arts of this University, may enroll upon the combined curriculum; that is, while continuing his registration in the College he may also register in the Medical School, provided the work he has already completed includes a sufficient number of the courses enumerated below to enable him to complete within one year the specified requirements described in the following paragraphs.

All students desiring to enter upon the Combined Curriculum must, before May 15 or the year preceding the double registration, file with the Registrar of the College of Literature, Science, and the Arts, on a blank to be obtained from him, a petition to be granted that privilege.

When the student so registered in the College and School has completed the first year of the Medical curriculum, and not less than 90 hours in the College of Literature, Science, and the Arts, he will be recommended for the degree of Bachelor of Arts, provided he has completed the requirements for graduation from the latter college (See page 122), and provided his work has included the following courses:

Rhetoric, 6 hours, including Courses 1 and 2.
French and German, 16 hours of either one, and 8 hours of the other.
English, 6 hours.
Psychology, 6 hours.
Electives from Group III, 12 hours, unless excused in part by the Commitee.
Physics, 10 hours, including two hours of laboratory work.
Chemistry, General, Qualitative, and Organic, 12 hours for students presenting Chemistry for entrance, otherwise 16 hours.
Physical Chemistry, 4 hours.
Zoölogy, 10 hours.
Botany, 4 hours.
Total, 78 or 82 hours.

Suggested electives: Latin or Elementary Greek, 8 hours; History, or Economics, or Philosophy, 8 hours; Qualitative Analysis, 4 hours; Organic Chemistry, 5 hours.

B.S. (IN MED.) AND M.D.

Students who so desire, may obtain the Degrees of Bachelor of Science in Medicine and Doctor of Medicine in six calendar years by complying with the requirements above set forth, except that they must complete the first and second years of the medical curriculum and that the credit required from the College of Literature, Science, and the Arts instead of 90 hours, shall be 67 hours before they may enroll upon the Combined Curriculum and 75 hours before they receive the B.S. (in Med.) degree, and shall include the following courses:

Rhetoric, 6 hours, including Courses 1 and 2.
French or German, 16 hours.
Electives from Group III, 12 hours.
Physics, 10 hours, including two hours of laboratory work.
Chemistry, General, Qualitative, and Organic, 12 hours for students presenting Chemistry for entrance, otherwise 16 hours.
Zoölogy, 4 hours.
Botany, 4 hours.
Total, 52 or 56 hours.
Electives are suggested from the courses before mentioned.

Students taking the six-year course will ordinarily need to attend the College of Literature, Science, and the Arts two and one-half years, or two years and two summer sessions. Those whose scholarship is sufficiently high may apply for permission to elect a limited number of extra hours.

ADMISSION TO ADVANCED STANDING

The applicant must have studied as a matriculated medical student, in an approved medical school for a period of time at least equal to that already spent by the class which he seeks to enter. He must present credentials showing that he has satisfactorily completed courses equivalent in amount and character to those given in this school, in the year or years preceding that to which he seeks admission and must pass examinations at the beginning of the session in all the subjects that have already been pursued by the class which he desires to enter. Certificates of standing should be presented, but these cannot be accepted in place of these examinations.

COURSES OF INSTRUCTION

The regular curriculum covers four years of nine months each. The first two years are devoted to the more fundamental scientific courses which serve as a basis for the technical and clinical studies which follow. Nearly the entire time of the first year is devoted to laboratory work. The forenoons of the remaining three years are devoted mainly to lectures and recitations, two or three each day; the afternoons to laboratory work, to clinical demonstration courses, and to clinics.

The following brief descriptions show the character and extent of the instruction given in the several branches during the current year, and indicate the order in which the different portions of the course are studied. Further details are given in the Special Announcement of the School.

ANATOMY

1. Systematic Course in Gross Human Anatomy. The course is repeated in periods of about eight weeks each. October to November, December to January, February to March. Daily, afternoons 1:00 to 5:30.

1*a*. Systematic Course in the Anatomy of the Extremities.

1*b*. Systematic Course in the Anatomy of the Abdomen and Pelvis.

1*c*. Systematic Course in the Anatomy of the Head, Neck, and Thorax. Recitations for each section three hours weekly. Professor McCotter, Mr. Guild, Dr. Wafer, and assistants.

2. Embryology, Histogenesis, General Histology, Organology, and Anatomy of the Special Sense Organs and Nervous System. Lectures, recitations, and laboratory work. Daily, 8 to 12, Saturday included, October to end of February. Professor Huber, Mr. Atwell, Dr. Worcester, and assistants.

2*a*. General Embryology, General Histology, and Histogenesis, and the Structure of the Elementary Tissues. Six weeks.

2*b*. Organology, including the development of the organs. About six weeks.

2*c*. Gross and Microscopic Anatomy of the Central Nervous System and Special Sense Organs. Six weeks.

3. Lectures, Recitations, and Laboratory Work in Human Anatomy for Dental Students. Twelve weeks, March to May. Daily, 1 to 5. Mr. Hoag, Dr. Wafer, and assistants.

4. Lectures, Recitations, and Laboratory Work in Embryology and Histology for Dental Students. Twelve weeks, March to June. Two sections, each working three half days a week, 1 to 5. Saturday, 8 to 12. Professor Huber, Mr. Atwell, Dr. Worcester, and assistants.

5. Regional and Topographic Anatomy, based on frozen sections, with Lectures and Demonstrations correlating developmental microscopic and gross Anatomy. Eight weeks, April to June, 8 to 11 daily. Professors Huber and McCotter, Mr. Guild, and assistants.

6. Surgical and Applied Anatomy. Second Semester. *One hour.* Professor Darling.

7. Anatomy of Special Regions. Open to Graduates in Medicine and Undergraduates who have completed the dissection of the entire body. Hours to be arranged with the Instructor in charge. Professor McCotter.

8. Histology and Embryological Technique. Professor Huber, and assistants.

9. Advance Course in Mammalian Embryology, Histogenesis, and Histology. Professor Huber.

10. Comparative Vertebrate Neurology. Professor McCotter.

11. Advance Course in the Development and Microscopic Anatomy of the Central and Peripheral Nervous System, Human and Comparative. Professor HUBER.

12. Research in Vertebrate Histology, Embryology, Anatomy of the Nervous System, Gross Anatomy, Human and Comparative. Professors HUBER and MCCOTTER.

HYGIENE, BACTERIOLOGY, AND PHYSIOLOGICAL CHEMISTRY

1. General Hygiene. Lectures. Three times a week, second semester, second year. Professor VAUGHAN.

2. General Bacteriology. Lectures and quizzes. Daily, second semester, first year. Professor NOVY.

3. Practical Bacteriology. Laboratory work and recitations. Afternoons for twelve weeks, beginning early in March, first year. Professor NOVY, and Assistant Professor DE KRUIF.

This course is open only to students of this School.

3*a*. Practical Bacteriology. The same as Course 3, but open to students other than those eligible to Course 3. December to March. Professor NOVY, and Assistant Professor DE KRUIF.

3*b*. Practical Bacteriology. For Dental students only. Eight weeks, 1 to 6, beginning the first week in October. Professor NOVY, and Assistant Professor DE KRUIF.

3E. Practical Bacteriology. M, W, F, 1-6, during the second half of the first semester. Open only to students of Sanitary Engineering. Assistant Professor DE KRUIF.

4. Advanced Bacteriology. Professor NOVY.

Course 4 must be preceded by Course 3, or 3*a*. It is an optional course, and is open only to a limited number of students.

4*a*. The Pathogenic Protozoa. Continuation of Course 4. Professor NOVY.

5. Water Analysis. Chemical, microscopical, and bacteriological study of drinking water. Professor VAUGHAN and Mr. LEVIN.

5E. Water Analysis. Two afternoons weekly during the first half of the semester. Open only to students of Sanitary Engineering. Professor VAUGHAN and Mr. LEVIN.

6. Food Analysis. Chemical and bacteriological examination of food. Professor VAUGHAN, and Mr. SMITH.

Course 6 is open only to students specially qualified for the work.

7. Research Work on Hygiene Problems. Professors VAUGHAN and NOVY.

Course 7 is open only to students specially qualified for the work.

8. Physiological Chemistry. Lectures. Three times a week, first semester, second year. Professor Vaughan.

9. Physiological Chemistry. Laboratory work and recitations. Afternoons for nine weeks, second year. Professor Novy and Mr. Piper.

10. Advanced Physiological Chemistry. Afternoons for nine weeks. Professor Novy and Mr. Piper.

Course 10 is an optional course.

10*a*. Research in Bacteriology and Protozoölogy. Professor Novy.

11. The Administration of Health Laws. Professor Vaughan.

PHYSIOLOGY

1. Physiology. Lectures, demonstrations, recitations. Five times a week, second semester, first year. Professor Lombard.

2. Physiology. Continuation of Course 1. Lectures, demonstrations, recitations. Five times a week, first semester, second year. Professor Lombard.

3. Practical Physiology. Laboratory work. Afternoons for nine weeks, second year. Professor Lombard and Dr. Cope.

4. Advanced Work in Physiology. Professor Lombard.

Course 4 is open only to students who have completed Courses 1, 2, and 3, or an equivalent amount of work.

5. Research Work. Professor Lombard.

PATHOLOGY

1. General Pathology. Four times a week, first semester; three times a week, second semester, second year. Professor Warthin.

2. General Pathology. Laboratory work. Afternoons for nine weeks, second year. Professor Warthin and Assistant Professor Weller.

3. Special and Gross Pathology. Gross pathological anatomy. One hour a week, third year, in addition to time taken for clinical autopsies. Professor Warthin.

4. Autopsies. Professor Warthin and Assistant Professor Weller.

5. Patholgical Technique. Elective. Professor Warthin and Dr. Weller.

6. Pathological Physiology. Professor Warthin and Assistant Professor Weller.

7. Graduate Course. Professor Warthin.

PHARMACOLOGY AND THERAPEUTICS

1. Pharmacology. Lectures, demonstrations, recitations. Three times a week, second semester, second year. Professor EDMUNDS.
2. Pharmacology. Lectures, demonstrations, recitations. Three times a week, first semester, third year. Professor EDMUNDS.

2*a*. Pharmacology and Therapeutics. Two times a week, second semester, third year. Professor EDMUNDS and Dr. MARSHALL.

3. Experimental Pharmacology. Second semester, second year. Professor EDMUNDS and Dr. SMITH.
4. General Therapeutics. Two times a week, first and second semesters, fourth year. Dr. MARSHALL.
5. Research Work in Pharmacology. Third and fourth years. Professor EDMUNDS.
6. Practical Anaesthesia. Dr. MARSHALL and Miss DAVIS.

SURGERY

1. Principles of Surgery. Lectures, recitations, and text-book. Twice a week, third year. Professor DE NANCREDE and Dr. PEET.
2. Diagnostic Clinic. Once a week, second semester, third year. Professors DE NANCREDE and DARLING.
3. Demonstration Course in Operative Surgery. Third year. Dr. PEET.
4. Oral Surgery. First semester, third year. Surgical Instruments. Second semester, third year. Professor DARLING.
5. Special Surgery. Lectures and recitations. Three times a week, fourth year. Professors DE NANCREDE, DARLING, and LOREE, and Dr. WASHBURNE.
6. Surgical Clinics. Fourth year. Professors DE NANCREDE, DARLING, LOREE, and assistants.
7. Ward Classes. Fourth year. Professors DE NANCREDE, DARLING, and LOREE, and Dr. WASHBURNE.

INTERNAL MEDICINE AND DISEASES OF CHILDREN

1. Physical Diagnosis. Introductory course. Two hours a week, second semester, second year. Dr. GILBERT.
2. Clinics and recitation. Five hours a week, third year. Professor FOSTER and Assistant Professor NEWBURGH.
3. Physical Diagnosis. Every afternoon, for eight weeks, third year. Dr. VIS.

4. Clinical Microscopy. Afternoons, daily for eight weeks, third year. Dr. Gilbert.
5. Clinical Physiology of the Circulation. Optional course. Second semester, third year. Professor Foster.
6. Case Taking. Patients are assigned to members of the class, who take the history, work out the present condition, and write the results, with differential diagnosis, prognosis, and plan of treatment. Fourth year. Professor Foster, and assistants.
7. Clinical Lecture and Conference. Twice a week, fourth year. Professor Foster.
8. Chemistry of Milk and Digestion. Laboratory work, fourth year. Professor Cowie and assistants.
9. Lectures on Diseases of Children. Once a week, fourth year. Professor Cowie and assistants.
10. Clinic in Pediatrics. Once a week, fourth year. Professor Cowie.
11. Advanced Work in Chemistry of Milk and Digestion. Professor Cowie.

DISEASES OF THE MIND AND NERVOUS SYSTEM

1. For third-year students. Twelve exercises, each of two hours. Laboratory work in the pathological anatomy and physiology of the nervous system. Professor Barrett.
2. Lecture and Recitation Course. One hour each week throughout the year. For students of the third year. Professor Camp.
3. Clinical Lecture. Two hours each week throughout the fourth year. Professor Camp.
4. Psychiatry. A clinical lecture course given one and one-half hours each week throughout the fourth year. Professor Barrett.
5. Ward Class. Two hours daily for the fourth-year class. Professor Camp and Dr. Klingman.
6. Ward Class in Psychiatry. Professor Barrett.
7. Laboratory Work in Neural Pathology. Professor Barrett.
8. Laboratory Work in Experimental Psychology. Professors Barrett and Pillsbury.

OPHTHALMOLOGY

1. Lectures and Recitations. Fourth year. Professor Parker.
2. Clinical Lectures. Fourth year. Professor Parker.
3. Demonstration Course. Twice a week, for eight weeks, third year. Dr. Slocum.

OTO-LARYNGOLOGY

1. Lectures and Recitations. Fourth year. Professor CANFIELD.
2. Clinical Course. Fourth year. Professor CANFIELD.
3. Demonstration Course. Twice a week, for eight weeks, third year. Professor CANFIELD and Dr. BARLOW.

OBSTETRICS AND GYNECOLOGY

1. Theory of Obstetrics. Lectures, recitations, clinical conferences. Two times a week, first and second semesters, third year. Professor PETERSON, Dr. BARTHOLOMEW, Dr. BOTTSFORD, and Dr. SHERRICK.
2. Demonstration Course in Obstetrics. Three times a week for eight weeks, third year. Dr. BARTHOLOMEW and Dr. BOTTSFORD.
3. Gynecology. Lectures, recitations. One hour a week, third year. Professor PETERSON.
4. Obstetrics and Gynecology Clinic. Two hours a week, fourth year. Professor PETERSON.
5. Practical Obstetrics. Small sections. Fourth year. Dr. BARTHOLOMEW, and Dr. BOTTSFORD.
6. Obstetrics and Gynecology. Diagnostic Clinic and Ward Class. Two hours a day for six weeks. Professor PETERSON and assistants.

DERMATOLOGY AND SYPHILOLOGY

1. Clinical lectures and conferences, one and one-half hours a week. Fourth year. Professor WILE.
2. Ward Class. Five hours a week. Fourth year. Professor WILE and Dr. MCGARRY.
3. Recitations, clinic, and lantern slide demonstration, one hour a week, second semester. Third year. Professor WILE and Dr. MCGARRY.
4. Dermatology and Syphilology. Section work. Professor WILE and Dr. MCGARRY.

ROENTGENOLOGY

1. Radiology and Radiotherapy. Lectures and demonstrations once a week during the second semester to the fourth year students. Professor VAN ZWALUWENBURG.

MEDICAL JURISPRUDENCE AND TOXICOLOGY

1. Lectures from the legal standpoint. First semester, fourth year. Mr. LIGHTNER.
2. Lectures from the medical standpoint. Second semester, fourth year. Professor VAUGHAN.

BEDSIDE AND DISPENSARY INSTRUCTION

Senior students are given charge of patients, and are required to make diagnosis, prescribe, dress wounds, and perform minor operations under the direction of the professor in charge. A lying-in ward furnishes obstetrical cases, which are attended by the senior students in rotation.

COURSES IN PUBLIC HEALTH

Courses in Public Health are given in the Graduate School, leading to the degrees of Master of Science in Public Health and Doctor of Public Health.

The greatest movement of the present time is that for the prevention of disease and the conservation of human life and health. This has resulted in a great campaign of education of laymen in matters of hygiene and sanitation, and as a natural development out of this educational movement there has come an ever growing demand for the services of men properly trained as public health officers. The next decade will see a tremendous development of public health organization in the United States; and to meet this there must be made available a body of men educated in public health work. In this education of public health officers the State University finds an especially appropriate field, as no other matter more closely touches the lives and happiness of the citizens of the State. It is with this view-point that the University of Michigan offers these courses.

RULES CONCERNING EXAMINATIONS

1. *Honor System.*—For a number of years all the examinations in this School have been under student control. Under this "Honor System" the faculty turns over to the students the complete supervision of all examinations. Each class elects an Honor Committee which has charge of this matter and which is responsible to the faculty. In case there is any infraction of rules, this committee tries the offender, and if necessary makes recommendations to the faculty for official action.

2. Examinations (either written or oral, or both) will be held at the close of each course or semester. The result of each examination must be reported in writing and within ten days to the secretary of the Faculty by the Professor in charge.

3. A student may be marked A, excellent; B, good; C, fair; D, conditioned; or E, not passed. A student may also be reported Incomplete, in which case he may apply for examination or re-examination in the same subject at the close of the next course or semester or at a time set by the professor in charge, provided he has completed the work of the course. A student reported D (conditioned) can apply for re-examination in the same subject at the close of the next course or semester, or at the next officially announced time for the removal of conditions. Examinations for the removal of conditions are held during the first week of the session and immediately after the Christmas and spring vacations. A student reported as Absent may at the discretion of the professor in charge be given a special examination or comply with the rule governing the removal of conditions. A student reported E "not passed" cannot apply for re-examination until he has again taken the course in which he has failed.

4. All "Incompletes" and "Conditions" not passed within one year become "Not Passed."

5. Candidates for graduation failing in an examination will be allowed a re-examination before the entire Faculty, and failing in this, such students may again present themselves for examination at the expiration of a time which shall be determined by the Faculty, but which shall not be less than three months, nor longer than twelve months.

6. No student shall be recommended for graduation until all his required work is completed and all his examinations passed.

7. *Delinquent Students.*—The Faculty has appointed a Committee on Delinquent Students whose duty it is to take under consideration the cases of all students whose work has not been maintained at the proper standard. After necessary investigation has been made as to the cause of failure, this committee makes recommendations to the Faculty for official action.

INSTRUCTION FOR WOMEN

The course of instruction for women is in all respects the same as for men. It has been found in this and other of the better medical schools that both sexes may attend with propriety and at the same time the various laboratory courses, including Practical Anatomy, the lecture courses, as also the sectional and public clinics.

REQUIREMENTS FOR GRADUATION

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age, and possess a good moral character. He must have completed the required courses in laboratory work, and have passed satisfactory examinations on all the required studies included in the full course of instruction. He must have pursued the study of medicine for a period of four years and have attended four full courses of medical lectures, the last of which must have been in this School.

Graduates of other reputable medical colleges, wishing to take a degree in this school, must regularly matriculate and do all work required in this school and not required in the school that has granted the diploma already held. The shortest term of residence for such graduates is one year. Graduates of other reputable medical schools may, however, without becoming candidates for a degree, pursue any of the graduate courses on the conditions stated below.

GRADUATE COURSES

(See the chapter on the Graduate School.)

The rapid development of medical science has necessitated the introduction of many new subjects into the curriculum, and this leads practitioners, who wish to keep abreast of the times, to return to the University in order to take special courses in the newer subjects. Moreover, at the present time some of the laboratory and demonstration courses mentioned in the preceding schedules are not given in many American medical colleges, and there have been frequent requests for admission to these courses from graduates of such schools. The frequency of these requests has led the Board of Regents to authorize the Faculty to admit medical graduates to any one or more of the regular courses when such candidates give evidence of their ability to profit by such instruction. In such cases the graduate student must pay ten dollars tuition for each course taken in addition to the ordinary laboratory expenses of such course.

Graduate work is also offered to students who have taken the full required courses.

MUSEUMS AND LABORATORIES

For further information in regard to the University museums, laboratories, libraries, and gymnasiums, see page 51.

ANATOMICAL COLLECTION

The museums of the late Professors FORD and SAGER, including several thousand specimens, the result of many years' labor in collecting and preparing material intended to aid directly in teaching, are now the property of the University. Other preparations are constantly being added, and the museum now contains a valuable collection of bones, illustrating abnormal as well as normal conditions and the various changes that occur from infancy to old age; dissections, general and partial, of the vascular, nervous, and muscular systems; series of sections made of frozen bodies; preparations illustrative of visceral and other anomalies; models of various organs and portions of the body in wax, papier-maché, and plaster, and preparations and models illustrating the phenomena of human and comparative embryology and neurology.

The collection contained in the University Museum and the valuable osteological and odontological collections in the museum of the College of Dental Surgery are also open to the inspection of students.

MUSEUM OF PATHOLOGY

The laboratory of pathology contains a very complete and well-arranged pathological museum with many rare and valuable specimens, utilized for teaching purposes.

MUSEUM OF MATERIA MEDICA

The museum of materia medica consists of a fairly complete collection of the crude substances used in medicine, along with their principal preparations and active principles. In the arrangement of the drugs into groups convenient for study, importance is attached not to their origin but to their action. The museum is also provided with several works of reference for use of students, and with a number of graphic registrations of the action of drugs. It is open to students of the junior class at such hours as they arrange with the instructor.

MUSEUM OF NATURAL HISTORY AND LIBRARY

Students in medicine have access to the botanical, zoological, and geological cabinets of the University, estimated to contain 255,000 specimens. The Medical Library contains 27,404 volumes and 500 pamphlets, and is housed in the General Library. A complete catalogue, arranged both by authors and by subjects, is accessible to readers. The leading medical periodicals of this country and of Europe, 356 in number, are taken and kept on file. For information concerning the General Library and the special libraries in chemistry and biology, see page 51.

ANATOMICAL LABORATORIES

The laboratory of anatomy is situated on the third floor of the Medical building and contains six well lighted and well ventilated dissecting rooms. A study room is provided for the convenience of the students, as also rooms for research and for special dissections, both comparative and human.

The laboratory possesses an osteological loan collection, and students are permitted to withdraw sets of bones illustrative of human osteology, which they may retain during their stay in the anatomical laboratory.

The histological laboratory is on the second floor of the Medical building. It provides facilities for elementary and for advanced work in histology and histogenesis. There is a large general laboratory for the elementary work in histology, and smaller rooms for the elementary and advanced work in histology and vertebrate embryology, together with storage rooms, a room in which a reference library is shelved, and private rooms for the use of the professor in charge and his staff. Suitable provision is made for students and graduates who desire to engage in the work of research. The laboratory equipment includes the apparatus and instruments needed for conducting the elementary work in histology and embryology, and for special research. An excellent collection of the Ziegler embryological models and of models of various glands and other minute anatomic structures made after the Born method of wax plate reconstruction and of corrosion preparations facilitates the work of instrnction in the courses of histology and embryology. Every encouragement is given students and other persons of sufficient preliminary training to undertake the investigation of special problems.

PHYSIOLOGICAL LABORATORY

The apartments provided for the physiological laboratory offer excellent facilities for practical work, whether of class instruction or of original investigation. Large and well-lighted rooms are appropriated to the use of the undergraduate students, who perform under the direction of instructors most of the fundamental physiological experiments. The subjects commonly embraced in the practical course relate to the physiology of muscle and nerve, reflex action, circulation, respiration, and digestion. Smaller rooms are devoted to advanced work and original investigation. The laboratory has a good supply of apparatus, tools, etc., and is open daily for physiological experiment and research.

PHARMACOLOGICAL LABORATORY

The pharmacological laboratory, which for a number of years was located in the old medical building, has been transferred to the new part of the old chemical building, now known as the Physiology and Pharmacology building, which has been completely remodeled in order to make it suitable for this work. The changes which have been made make it admirably adapted for the purpose, as ample room is provided for work along chemical lines as well as along those of experimental pharmacology.

The laboratory is well supplied with apparatus and material for original work in this branch of research, and any student or graduate, receives every encouragement in the prosecution of such work.

PATHOLOGICAL LABORATORY

The first floor on the east side of the Medical building and rooms in the basement are occupied by the pathological laboratory. Increased facilities are now afforded for graduate work and for work in research. A special room is also assigned to work in gynecological pathology.

The laboratory is supplied with microscopes, microtomes, paraffin ovens, and other apparatus necessary in the study of pathologic histology. Each student is furnished with a locker containing a microscope with high and low powers, and is assigned to a table containing the necessary stains and reagents for practical work. These are furnished by the laboratory.

The supply of material for the study of pathologic histology is the result of collections made in the pathological institutes of Vienna and Dresden, and embraces almost every known pathologic condition. This collection gives ample material for the regular courses, and, in addition, offers special opportunities to the advanced student who may wish to pursue studies in certain lines of special pathology, as the pathology of the nervous system, genito-urinary tract, skin, etc. In addition, an abundant supply of fresh material comes from the clinics of the University Hospital, and this is utilized to the fullest extent in the teaching both of gross and of microscopic pathology. The laboratory is fitted with a Bausch and Lomb carbonic acid freezing microtome for use in the making of quick diagnoses and in the preparation of fresh material for class study.

HYGIENIC LABORATORY

The hygienic laboratory, established by a special appropriation of the legislature in 1887, and opened for work January, 1889, is located in commodious quarters in the Medical building. The facilities for original research have been enlarged, and from twenty to thirty students in research can be accommodated at once. Special rooms have been fitted up for the chemical, microscopical, and bacteriological study of foods and drinks, and for the prosecution of investigations in the chemistry and action of bacterial and other toxins. With the large incubating tanks now in use, it is possible to obtain a cellular substance of bacteria in large amounts.

PASTEUR INSTITUTE

The Pasteur Institute was established as a department of the hygienic laboratory in April, 1903. During the years 1903 to 1915 inclusive 1,395 cases of hydrophobia were treated at this institute. Residents of Michigan are treated at a charge of $25.00 and they must provide their own room and board. Persons from other states are charged one hundred dollars for each treatment. The institute gives opportunity for all medical students to become practically familiar with the procedure necessary in the treatment of rabies.

BACTERIOLOGICAL LABORATORY

The west half of the second floor of the Medical building, containing about 7,000 square feet of floor space, is devoted to work in bacteriology. The two main laboratories contain seventy-eight desks, used by beginners and by advanced students. All the material required for the work is supplied, practically at cost, from a well-stocked dispensing room. Four rooms are devoted to the research work of the professor in charge, his assistants, and others qualified to carry on special studies. An incubating room, maintained at a constant temperature, is provided with individual drawers for the use of students. A similar room is reserved for the work in research. A cold room, including a spacious refrigerator, is cooled by means of a liquid carbonic acid plant in such a way that the refrigeration can be kept at, or below, the freezing point, while the temperature of the room itself is maintained at about 60°F. A special compartment of 1,000 cubic feet capacity is reserved for experimental disinfection. Provision is made for operative work on animals, cremation of infected material, sterilization of cages, etc. The well-lighted ground floor contains the store rooms and animal rooms and, in addition, a large room for microphotography. Gas, water, steam, and compressed air are supplied to the hoods in every work room. The laboratory is equipped with apparatus and instruments of the best make.

LABORATORY OF PHYSIOLOGICAL CHEMISTRY

This laboratory is in the west half of the third floor of the Medical building, and occupies about the same floor space as the bacteriological laboratory above described. The two rooms for the elementary and the advanced work are provided with sixty desks. An adjoining room is equipped with balances and microscopes. A preparation room, contains, among other things, a distilling plant from which the water is taken in pipes to different parts of the building. Special rooms are provided for the instructor and for research. There are also well-equipped rooms for combustions, for optical work, and for gas analysis. In every room there are spacious hoods with fittings for steam and compressed air in addition to gas and water. By an elaborate system of fan ventilation, the air in the laboratory is renewed every fifteen minutes. A small lecture room is in direct connection with the laboratory.

THE UNIVERSITY HOSPITAL

The University Hospital has the great advantage of being a hospital instituted primarily for teaching purposes, as all who are admitted are utilized freely for instruction. There are few hospitals where this is carried so far, the only restriction being the possibility of doing the patient harm. It may be well to emphasize this fact, as it has formed a distinct feature of this hospital since its beginning in 1869, when a large dwelling house, situated on the campus, was converted into a hospital, giving accommodation to about twenty patients, and in its further growth this feature has been maintained and developed. The hospital now embraces a central building erected in 1891, one office building, completed in 1896, a western building or pavilion acquired in 1901, a large addition known as the "Palmer Ward," and a central heating plant, containing the laundries, completed in 1903, a psychopathic hospital, and a contagious disease hospital built to accommodate twenty-four patients, an eye and ear ward, to accommodate forty patients, and a maternity hospital. The hospital now has 460 beds and contains two clinic amphitheatres, clinical laboratories, and a room for X-ray diagnostic work and X-ray therapy. An interne's home, erected in 1912, forms another of this group of buildings. The whole hospital is under the supervision of the Faculty and under the immediate direction of the hospital committee. The clinical teachers attend regularly upon the patients (each upon such cases as come regularly within his special department), and give the clinical instruction. Clinics are held every day during the college year and during the summer session for medical, surgical, gynecological, ophthalmological, and venereal cases, at which time examinations are made, prescriptions given, and surgical operations performed in the presence of the classes or of sections thereof.

The patients are assigned to students who take the histories of the cases, make the physical examinations, the diagnosis and prognosis, and suggest the line of treatment or operative procedure thought necessary, this under the direction of the professor in charge. The clinical laboratories under the direction of the departments of internal medicine, surgery, gynecology, and nervous diseases, all of which are especially equipped, furnish facilities for the scientific study of cases and are freely used by students as time and space permit. Stress is laid upon the value of ward and bedside instruction. The character of the hospital is such that this mode of instruction can be carried out more fully and more systematically than in many hospitals available for teaching purposes; this justifies the statement that the practical hospital work the students of this school are able to do is not yet given in many medical schools. Without detracting in any manner from the benefit which the patient may receive, it may be stated that much of the work of giving treatment, of dressing wounds, and of giving other detailed attention to patients is carried out, under proper supervision, by senior students. For the treatment of diseases of the nervous system, the hospital is furnished with apparatus for generating all kinds of electrical currents. In the lying-in ward the senior students are given an opportunity to attend cases of labor and become familiar with the duties of the lying-in room, under the immediate direction of the professor of obstetrics and his assistants. A large number of the cases submitted to the hospital are from a distance, and are of more than common interest, including numerous surgical and gynecological cases requiring major operations, many cases of disease of the lungs, heart, blood, digestive system, kidneys, and the nervous system. The eye, ear, nose, and throat service is large and replete with instructive cases. Patients with contagious diseases are treated in the isolation hospital. The expenses to patients are only for their board, for unusual appliances or for special nursing, and for medicines, the services of the clinical teachers of the Faculty being rendered gratuitously.

Patients who desire to enter the hospital are requested to write to the Superintendent of the University Hospital, Ann Arbor, Michigan, to ascertain if there is room for their accommodation and to obtain a circular giving more fully the rules governing admission.

Psychopathic Hospital.—The legislature of the State of Michigan, with a wise conception of the needs of those afflicted with mental disorders, and with a high appreciation of the advances of modern medical research, made provision for an addition to the University Hospital of a ward especially equipped for the care of a limited number of acute cases of insanity. This was done with the view of furnishing an opportunity for the more thorough study of the conditions attending insanity in its incipient stages, and with the hope that, by the aid of specialists in all branches of mediicne and surgery, and the laboratory facilities available at the University Hospital, there might result the discovery of causes of these diseases at present time unknown, and the development of methods of treatment that might increase the number of cures. The advantages to the medical student of such an addition to our hospital are apparent to all.

TRAINING SCHOOL FOR NURSES

The University Training School for Nurses was established in 1891, and has grown with the expansion of the Hospital until it now numbers 140 nurses in training. The Superintendent of Nurses, her four assistants, three clinic nurses, and nine ward supervisors, constitute the administrative staff. Students are admitted to the school upon the same terms as to the College of Literature, Science, and the Arts of the University (see page 103), and diplomas are granted by the Board of Regents at the completion of three years of forty-eight weeks each, only after efficiency has been proved by class and ward work and by examination. For further information in regard to the school application should be made to Miss FANTINE PEMBERTON, Superintendent of Nurses and Principal of the School, University Hospital, Ann Arbor, Michigan.

MEDICAL BUILDINGS

The Medical building, completed in 1903, measures 175 by 145 feet, with an interior court, measuring 75 by 45 feet, and has a high basement and three stories. It provides accommodation for the departments of hygiene, bacteriology, physiological chemistry, pathology, anatomy, histology, and embryology. It contains, further, two large amphitheaters, two lecture rooms, a faculty room, and the offices of the Dean and the Secretary.

The departments of physiology and pharmacology have been provided for in the north wing of the building vacated by the department of chemistry. This building has been entirely rebuilt and refurnished, and in addition to the large laboratories for general student use, there are also smaller rooms for the accommodation of assistant and research students.

BEQUESTS

The Elizabeth H. Bates Bequest.—In the spring of 1898, Dr. Elizabeth H. Bates, of Port Chester, N. Y., died leaving to the Medical School an estate valued at about $140,000. Dr. Bates was in active practice for many years. She took a deep interest in the medical education of women, and the bequest may be looked upon as a recognition by her of the successful efforts made by the University of Michigan to give to women medical instruction equal to that furnished men. In accordance with a provision of the will the title of Bates Professor of Diseases of Women and Children has been given to Dr. Reuben Peterson. (The didactic and clinical work in connection with children's diseases is in charge of the chair of Internal Medicine, as heretofore.)

The Treadwell Bequest.—The late Mrs. Edward Treadwell, of Ann Arbor, bequeathed to University Hospital the sum of $2,000.

The Davis Bequest.—The late Mrs. Davis, of New Castle, Ind., made the University Hospital and the Ann Arbor Society for the Prevention of Cruelty to Animals her residuary legatees. The value of this bequest is about $2,000.

The Palmer Bequest.—Mrs. Palmer, widow of Professor Alonzo B. Palmer, formerly Dean of this School, left the sum of thirty-five thousand dollars to the Hospital, and the "Palmer Ward" has been erected and equipped as a memorial to this distinguished pioneer in American medicine.

In addition to the above sum, Mrs. Palmer left $15,000, the income from which is used to support free beds in the University Hospital.

The Mary J. Furnum Bequest.—By the will of the late Mary J. Farnum, of Ann Arbor, there was bequeathed to the Palmer Hospital Fund the sum of $1,000, the interest from which, by resolution of the Board of Regents, is to be used for the purchase of apparatus for the study of Children's Diseases.

The Mary Skeels Gradle Memorial Fund.—Mr. Walter Gradle, Lit. 1900, of Chicago, Illinois, has given to the University Hospital for the use of the Children's Ward, the sum of $1,000, to be known as the Mary Skeels Gradle Memorial Fund.

Fund of the Class of 1890.—Some years ago this class raised a sum of five hundred dollars to aid worthy students in finishing their courses. This amount has been paid and is in the hands of the treasurer of the University. In 1915 the class voted to raise an additional five hundred dollars to be added to this sum.

C. C. Beach Scholarship.—W. R. Wooden, '79*l*, has established a scholarship in memory of the late Chollett C. Beach, of Battle Creek, Michigan. The amount of the scholarship is twelve hundred dollars. The express purpose of this scholarship is for special research in Bacteriology. The holder of this scholarship for the year 1916-1917 is ————.

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

For the rules governing participation in public activities see page 86.

FEES AND EXPENSES

The matriculation Fee and the Annual Fee must be paid in advance, and no student can enter upon his work until after such payment. For the rules governing Second Semester fees and the refunding of fees see page 101.

Matriculation Fee.—For Michigan students, *ten dollars;* for all others, *twenty-five dollars.*

Annual Fee.—For Michigan students, *one hundred dollars;* for all others, *one hundred dollars.* This annual fee covers all necessary laboratory and demonstration course fees.

Graduation Fee.—For all alike, *ten dollars.*

Laboratory and Demonstration Course Fees.—As noted above under the general title of Fees and Expenses the annual fee which is charged each student covers all necessary laboratory expenses and no further payment of laboratory fee is required. However, in case of students, other than medical students, who may desire to elect any of the Laboratory or Demonstration Courses in the Medical School, the following fees are charged to cover necessary expense:

Anatomy	$21 00
Bacteriology	15 00
Physiological Chemistry	15 00
Histology	10 00
Physiology	5 00
Pharmacology	5 00
Pathology	10 00
Operative Surgery	10 00
Demonstration Course in Physical Diagnosis	5 00
Demonstration Course in Clinical Microscopy	5 00
Demonstration Course in Obstetrics	10 00
Demonstration Course in Neural Pathology	10 00
Demonstration Course in Ophthalmology	5 00
Demonstration Course in Oto-Laryngology	5 00

A deposit of the amount indicated for each of the above is required before the work of the course is begun.

Practitioners' Courses.—A fee of *ten dollars* is charged to graduate students for each course taken, in addition to the ordinary laboratory expenses of the course.

The total amount of fees paid to the University during the whole four years' course for matriculation, incidental expenses, materials used, and graduation is, for Michigan students, about $450.00, and for all others, about $550.00, varying a little with the students' actual laboratory expenses.

For additional information in regard to expenses, see page 99.

Law School[*]

A special Announcement giving further information in regard to this School is published annually. For copies of this Announcement, or for other information relating to this School, address Professor H. M. Bates, Dean of the Law School, Ann Arbor, Michigan.

The Law School of the University of Michigan was opened in 1859. The first Faculty was composed of James V. Campbell, Dean, and Charles I. Walker and Thomas M. Cooley, Professors. With these men as founders and leaders, the growth and influence of the School were marked. The Faculty is now composed of seventeen resident members, who devote themselves regularly and continuously to the work of instruction, and of several non-resident lecturers, who offer courses in special fields in the law as indicated in the faculty list elsewhere in this catalogue.

Instruction is offered in all the branches of the common law, of equity, the statute law of the United States, Roman law and some of its modern adaptations, and the science of jurisprudence. It is believed, however, that students are best trained for the practice of law by studying it not as mere dogma and collections of precedents, but with a broader view of its origin, development, and function. While, therefore, careful attention is given to practice, procedure, and the other so-called practical features of the law, strong emphasis is also laid upon the importance of a scholarly grasp of the law as a science. The greater part of the instruction is given by means of the free discussion of legal principles as disclosed in reported cases.

When, however, the nature of the subject or other circumstances require other methods of instruction, they are freely resorted to. This is true particularly of the work in the practice court, in trial practice, and the other procedural courses. Work of this character is so arranged as not to interfere with the thorough and systematic study of the theory of the law. After years of experimentation with and development of these courses, results have been obtained which justify the Faculty in believing that this work is of value, not only in training students in procedure, but principally as throwing a clarifying and vivifying light upon the theory of both procedural and substantive law.

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[*] **Formerly known as the Department of Law.**

There can be little doubt that the conceded efficiency of the modern law school in our better universities is due in large part to the fact that the instruction has been confined to the main purpose for which law schools are established, viz., the study of law, to the exclusion of all courses and methods which do not admit of dealing with first-hand material, and in such way as to require intensive thinking by the student. While the primary function of law schools is to train men to practice law, nevertheless, in order that there may be opportunity for the training of law teachers, scholars and writers, the time has undoubtedly come when instruction of an advanced nature should be offered in some of the university law schools. To meet this requirement this Law School offers *advanced* instruction in jurisprudence, the comparative study of law, history of law, philosophy of law, the Roman law and other related subjects. A detailed announcement of these courses will be found on pages 26-29 of the Announcement of the Law School, and also in the Announcement of the Graduate School.

The academic year extends from the Tuesday preceding the first Thursday in October to the last Thursday in June (October 2, 1917, to June 27, 1918).

For information concerning the summer session of the School, see a subsequent chapter.

DIRECTIONS TO APPLICANTS FOR ADMISSION

Before admission to the School, or to the entrance examination, the applicant is required to present to the Dean the Treasurer's receipt for payment of the matriculation fee and the annual fee. It is essential, therefore, that he apply first to the Secretary at his office in the Law building, register his name as a student in the Law School, and pay his fees to the Treasurer of the University. He is then entitled to apply for admission. In case of rejection, the money paid preliminary to the examination is refunded by the Treasurer.

REQUIREMENTS FOR ADMISSION

Applicants for admission to the first year class must be at least nineteen, to the second year class, twenty, and to the third year class, twenty-one years of age. Applicants for admission to the fourth year class or as special students must be at least twenty-one years of age. Every applicant for admission, whether as a regular or as a special student, must present a certificate of character. This may be in the form of a certificate of graduation, or of honorable dismissal from the school with which the applicant was last connected, or, in the case of special students who cannot present these, in the form of a general letter as to character.

WHEN STUDENTS MUST ENTER

Students may enter at the beginning of either semester or of the Summer Session, but for students not entering upon advanced standing, a full three years of residence is required to complete the curriculum. For this purpose three Summer Sessions count as one year. In any case students are expected to enroll at the opening of the session. Those who enter late necessarily lose much of the work, and absences at that time are treated like other absences in reducing the number of hours of credit that may be earned. In no event can students who present themselves more than a month after the opening of any session be permitted to work for credit toward graduation during that session.

Candidates for advanced standing must present themselves for examination one week before the opening of the School.

ADMISSION AS CANDIDATE FOR A DEGREE

Graduates of approved universities or colleges and students who, in addition to an academic or high school course of four years, have completed two full years of work in an approved university or college, are admitted to the school as candidates for the degree. The school does not specify any particular subjects which must be taken during the required year of college work. In general, students are advised to take such courses as those suggested for a two-year preliminary curriculum in the College of Literature, Science, and the Arts, of this University on page 135. Work of high school or academic grade taken during the college year will not be accepted as meeting the requirement of a college year. College courses in which there are unremoved conditions or other deficiencies will not be accepted.

In all cases the applicant should present to the Dean of the School, before the time of application for admission, evidence that he comes within some one of the classes named. This, in the case of a university or college graduate, should be in the form of a certificate of graduation; in the case of other applicants, in the form of a certificate showing in detail the conditions of admission and the university or college work accomplished, and including an honorable dismissal signed by the proper authority. *A diploma will not be accepted as evidence of the completion of the required work.* Blank forms for the certificate will be furnished upon application. These, when filled out, should be mailed to the Dean of the school at the earliest possible time. *The applicant will save time and prevent inconvenience and possible confusion by filing his credentials before September first.*

The college or university work required for admission to the Law School is entirely distinct and separate from law work and cannot be taken in the Law School. It must be pursued in the College of Literature, Science, and the Arts of this University, or in some other approved college or university.

All students planning to pursue this required college work in this University preliminary to entering the Law School should make their applications for admission to the Registrar. Students who have taken their college work in other colleges or universities, should make their applications for admission directly to the Dean of the Law School.

ADMISSION OF SPECIAL STUDENTS

Persons who are more than twenty-one years of age, but whose preliminary training has not been sufficiently extensive to satisfy the requirements for admission as regular students, *may, in exceptional cases,* be admitted as special students. The entry of special students is not encouraged. Applicants for admission under this rule must submit to the Dean recommendations as to character and evidence of the possession of general education, maturity, experience, and exceptional ability that may be considered a fair equivalent of the formal preliminary requirements made in the case of regular students.

No one should present himself for admission as a special student until he has first received from the Dean assurance that his application has been favorably acted upon.

ADMISSION TO ADVANCED STANDING

Admission to advanced standing is upon examination. Persons who have the necessary qualifications for admission to the school, and who have satisfactorily completed work in an approved law school, may, upon presentation of a certificate of scholarship and of honorable dismissal from such school, become candidates for advanced standing in the school to the extent of the work so completed. The certificate should show the nature of the work, the time it was pursued, the text books used, and the grades received.

All candidates for advanced standing should secure the above mentioned certificates of preparatory work and of legal study and send them to the Dean of the school before presenting themselves for admission. He will then inform them whether they may receive advanvced credit and the time that will probably be required to complete the course.

In the fall of 1917 examinations for admission to advanced standing will be held from September 30 to October 4. All candidates are expected to present themselves at this time.

The summer session of the school offers advantages to applicants for advanced standing, which are explained in the chapter on the Summer Session.

COMBINED CURRICULUM IN LETTERS AND LAW

The marked tendency of the day is toward an increasingly thorough equipment for every profession. In no profession has the standard of proficiency more rapidly advanced than in the law. Accordingly every student expecting to enter this school is urged to take as thorough and complete a collegiate course as his circumstances will permit. All who can do so are, therefore, urged to consider the combined curriculum in letters and law more fully described on page 134. It is the aim of this curriculum to provide a broad collegiate training with a thorough technical preparation for the practice of law.

SIX-YEAR COMBINED CURRICULUM

By taking the Combined Curriculum in Letters and Law it is now possible for students who receive permission to shorten from seven to six years the time required to earn the degrees of Bachelor of Arts and Bachelor of Laws. The work of students who receive permission to enter upon the combined curriculum is under the supervision of the joint special committee consisting for the current year of Professors Effinger, Bates, Canfield, Goddard, and Hall.

A fuller description of the combined curriculum may be found on pages 134 and 135, where may be found, also, for those who cannot take the full six-year curriculum, a suggested two-year program preliminary to the study of law.

CLASS RATING

It is expected that students will, at the time of their admission to the school apply for and obtain such class rating as they may desire and be entitled to, and that such rating will be final. But in case of subsequent unexpected change in circumstances or condition, application may be made to the Dean, at the beginning of a semester only, for a change in classification or work.

Students who have been admitted as special students, may at the beginning of the second year present to the Dean the necessary evidence of having made up such deficiencies, and apply for a change from special to regular standing. After the beginning of the second year no special student may offer for entrance credits earned while be was enrolled as a student of law, or may secure a regular standing by making up entrance deficiencies, nor will any students be permitted by enrollment as a special student to shorten the full three years of law study required to secure a degree. If the change requested contemplates advanced standing, the student must comply with the requirements for advanced standing as hereinbefore set forth.

DEGREES

Three Year Curriculum (LL.B.)

The degree of Bachelor of Laws is conferred upon those students in the School who have met the entrance requirements for candidates for the degree, as stated on page 412, and who have satisfactorily completed the three year curriculum, in accordance with the regulations established by the faculty. For those who come without advanced standing in law, this means regular attendance throughout three University years, or the equivalent in University years and summer sessions. For this purpose, three summer sessions may be considered as the equivalent of one University year. This period of attendance may be proportionately reduced for students who enter upon advanced standing. In no case, however, will this degree be conferred upon any student who has not been in attendance for at least the entire senior year of the course.

Three Year Curriculum (J.D.)

The degree of Doctor of Law is conferred upon students who have obtained the degree of Bachelor of Arts, or a substantially equivalent degree, either in the College of Literature, Science, and the Arts, of this University, or in some other approved college or university, and who have pursued the study of Law in this School for three University years, or in any approved law school for one year and in this school for at least two years, and who have maintained an exceptionally high standard of scholarship in at least three-fourths of their law work, computed on the basis of hours of credit. Credits obtained in summer sessions will count toward the degree.

Fourth Year Curriculum (LL.M.)

The degree of Master of Laws will be conferred upon those students who hold the degree of Bachelor of Laws from an approved institution, and who have completed in this School a fourth year of work as prescribed by the faculty, and explained on page 420.

The Four Year Curriculum (LL.M. or J.D.)

Students who meet the entrance requirement of two years of college work and enter upon the four year curriculum may receive the degree of Master of Laws (LL.M.) or the degree of Juris Doctor (J.D.) according to the standard of scholarship maintained by them in the Law School. The degree of Doctor of Law is conferred upon those students who have pursued the study of law for four years in any approved law school, of which at least two years, including the final year, must be taken in this School, and who have maintained an exceptionally high standard of scholarship in at least three-fourths of their law work, computed on the basis of hours of credit.

The degree of Master of Laws is conferred upon those students who have completed the four year curriculum, as above set forth, and who have maintained a satisfactory standard of scholarship throughout, but not the exceptionally high standard required of those who receive the degree of Juris Doctor.

REGULATIONS APPLICABLE TO ALL DEGREES

Credit earned in the summer sessions will be counted toward these degrees.

Only those who are present in person may receive their diplomas on Commencement Day. Others who have satisfied all the requirements for graduation, including the payment of the graduation fee, will receive their degrees at a subsequent meeting of the Board of Regents.

The graduation fee of ten dollars must be paid to the Treasurer of the University at least twenty-five days prior to the date of graduation.

LIBRARY

The Law Library now contains over thirty-six thousand volumes, including all the published reports of the courts of last resort of every state in the Union and those of most of the intermediate appellate courts, the Federal Courts, and the English, Scotch, Irish, and British Colonial Reports. Duplicate, and in some cases triplicate sets of several of these reports have been added. There is also an extensive collection of treatises and text-books, both English and American. Nearly complete sets of statutes and session laws of the United States, Great Britain and her colonies, and practically all of the American and English legal periodicals are in the Library.

The Library has been enriched by a number of gifts from friends of the University, including the Honorable Richard Fletcher, formerly one of the Justices of the Supreme Court of Massachusetts, the Honorable O. H. Dean, of Kansas City, and the heirs of the late Honorable Christian H. Buhl, of Detroit, the Honorable Samuel T. Douglass, formerly one of the Justices of the Supreme Court of Michigan, and the Honorable Thomas M. Cooley.

The General Library of the University, which contains more than two hundred seventy thousand volumes, is open to use by students in the Law School. It is rich in works of interest and importance to the lawyer.

THE LAW CURRICULUM

Courses: Regulations as to Credit

To secure the degree of LL.B. or the degree of J.D. in the three year curriculum the student must complete 72 hours of law work. Of this 34 hours is elective and 38 hours, including most of the work of the first year, is prescribed. The curriculum is a graded one and extends through three years of nine months each. The student by entering upon his work in June may complete the full curriculum in three summer sessions and two full years. The courses offered in the summer session are described in a later chapter.

To secure the degree of Master of Laws (LL.M.) or the degree of Juris Doctor (J.D.) in the four year curriculum the student must complete 96 hours of work. Of this 47 hours is prescribed and 49 hours is elective. The four year curriculum is also a graded one. and extends through four years of nine months each. Work taken during the summer sessions is counted toward the degrees in this curriculum, and as three summer sessions are the equivalent of one full year of work, various combinations for saving elapsed time may be made.

COURSES OF INSTRUCTION

The following is a statement of the work offered in the School. Without special permission from the Faculty not more than 13 hours can be elected in any semester. At the opening of each semester a schedule showing the hours of recitations and the books used in the various courses is published and distributed.

FIRST YEAR

FIRST SEMESTER

Contracts I.—Formation of a contract, including public policy. Text-book and cases. Three hours a week. Professor **Knowlton**.

Criminal Law and Procedure. — Cases. Three hours a week. Professor **Durfee**.

Property I.—The law of personal property; also in the law of real property, the topics of tenure, estates, seisin, statute of uses, fixtures, emblements, and waste. Cases. Three hours a week. Professor **Drake**.

Torts.—Text-book and cases. Four hours a week. Professor **Wilgus**.

SECOND SEMESTER

Common Law Pleading.—Text-book and cases. Three hours a week. Professor **Bogle**.

Contracts I.—The same as Contracts I, given in the first semester.

Contracts II.—Operation, interpretation, and discharge of contract. Text-book and cases. Three hours a week. Mr. **Grismore**.

Property II.—Natural rights, profits, easements, covenants running with the land at law, equitable restrictions, public rights, and rents. Cases. Three hours a week. Professor AIGLER.

Electives.—Three or four hours. (Agency, or Damages and Domestic Relations).

SECOND YEAR

FIRST SEMESTER

Property III (including Conveyancing).—Acquisition of real estate *inter vivos* including the topics adverse possession, prescription, form of conveyances, description of property conveyed, estates created, creation of easements and profits, covenants for title, estoppel by deed, execution of deeds, and dedication. Cases. Four hours a week. Professor AIGLER.

Trusts.—Cases. Four hours a week. Professor BOGLE.

Electives.—Four or five hours.

SECOND SEMESTER

Evidence.—Cases. Four hours a week. Professor LANE.

Electives.—Eight or nine hours.

THIRD YEAR

FIRST SEMESTER

Practice Court.—The purpose and nature of the work are explained on page 427. Class divided into groups of four. One hour course. Professors SUNDERLAND, STONER, and Mr. GRISMORE.

Trial Practice.—A study of the principles controlling the various steps in civil trials at law. The course will include the theory and practice relating to the issuance of service and return of process; appearance, both general and special; continuances; the right to a jury trial and the empanelling of the jury; the right to open and close; the opening statement of counsel; judgment on the pleadings; demurrer to the evidence; dismissal, non-suit, and directed verdict; instructing the jury; argument and conduct of counsel; special interrogatories and special verdicts; judgment notwithstanding the verdict and in arrest of judgment; new trials; and trial and findings by the court. Cases. Two hours a week. Professor SUNDERLAND.

Electives.—Nine or ten hours.

SECOND SEMESTER

Practice Court.—The work is described on page 427. Class divided into groups of four. One-hour course. Professors SUNDERLAND, STONER, WAITE, and DURFEE, and Mr. GRISMORE.

Electives.—Eleven or twelve hours.

FOURTH YEAR

FIRST SEMESTER

History of English Law.—A general introductory course. Four hours a week. Professor BARBOUR.

Roman Law.—This course will be made an introduction to comparative law, with a study of selections from the Roman Corpus Juris, treatises on modern civil law and the modern codes and, so far as may be possible, the tracing of the development of fundamental legal concepts in the derivatives of the Roman system. Pound's "Readings in Roman Law" will be used as the basis of the course, but a reading knowledge of Latin and of French or German is most desirable. Three hours a week. Professor DRAKE.

Electives.—Five or six hours.

SECOND SEMESTER

Jurisprudence.—The philosophic bases of law, a study of the concept of justice and its relation to law in the Continental and English systems. The course will be given as a proseminary, with lectures by the instructor and topical studies and reports by the students. The various systems of juridical philosophy will be examined with the purpose of determining, if possible, their bearing upon the practical problems of our present day law. No textbook will be used but the several volumes of the "Legal Philosophy Series" will be drawn upon for the studies and reports. Three hours a week. Professor DRAKE.

Electives.—Nine or ten hours.

ELECTIVES

In addition to the above courses, covering 38 hours of work which are required of all students, each candidate for a degree is required to elect from the following not less than 34 hours of work.
Agency.—Cases. Three hours a week. Professor GODDARD.

Bailments and Carriers.—Brief consideration of bailments in general, and particular attention to the law of pledge, innkeepers and common carriers of goods; carriers of passengers; the Post Office, and telegraph and telephone companies, as carriers of messages. Text-book and cases. Two hours a week. Professor ———.

Bankruptcy and Insolvency.—Assignments at the common law; procedure under the Bankruptcy Act. Cases. Two hours a week. Professor HOLBROOK.

Bills of Exchange and Promissory Notes.—Includes a careful study of the Negotiable Instruments Law as enacted in many of the states. Text-book and cases. Two hours a week. Professor BUNKER.

Code Pleading.—Text-book and cases. Two hours a week. Professor SUNDERLAND.

Conflict of Laws.—A study of the law that governs in transactions between parties in different states, or in foreign countries, where the laws of the different states, or countries, as to the matter involved are different. Text-book and cases. Three hours a week. Professor LANE.

Constitutional Law I.—General principles of constitutional law, federal and state. Making and changing constitutions; function of judiciary in enforcing constitutions; separation and delegation of governmental powers; political and civil rights; interstate privileges and immunities of citizens; due process and equal protection of law; police power; taxation; eminent domain. Cases. Three hours a week, first semester. Professor BATES.

Constitutional Law II.—The Federal Government. General scope of federal powers; money, banking, postal, and military powers; foreign relations; territories, dependencies, and new states; federal taxation; regulation of commerce; intergovernmental relations; jurisdiction of federal courts. Cases. Three hours a week, second semester. Professor BATES.

Corporations, Private.—Cases. Four hours a week. Professor WILGUS.

Damages.—Cases. Two hours a week. Professor DRAKE.

Domestic Relations.—Husband and wife, parent and child, guardian and ward. Two hours a week. Professor HOLBROOK.

Equitable Remedies.—Including injunction, specific performance, and receivers. Text-book and cases. Three hours a week. Professor BUNKER.

Equity.—A general course in equity. Cases. Three hours a week for two semesters. Professor BARBOUR.

Equity Pleading and Procedure.—Cases. Two hours a week. Professor BUNKER.

Federal Courts.—The system of courts created under the authority of the Constitution of the United States, the jurisdiction of the several courts and the procedure therein. Text-book. Two hours a week. Professor BUNKER.

Insurance Law.—History, nature, and general principles of insurance law; fire, life, accident, and marine insurance. Cases. Two hours a week. Professor LANE.

Irrigation Law.—Riparian rights in general; their extent, use and protection; the doctrine of appropriation; initiation of rights; priorities; transfer and extinguishment of rights; underground waters; interstate streams. Cases. Two hours a week. Professor HOLBROOK. (This course will be given in 1917-1918 and alternate years thereafter.)

Judgments.—Attachments, garnishments, judgments, and executions. Text-book and cases. Two hours a week. Professor ROOD.

Jurisprudence, Science of.—The object of this course is to give students, after their study of the various branches of the law in isolation, a systematic and comprehensive study of the few underlying principles of all law, taking Holland's "Elements of Jurisprudence" as the basis of lectures and recitations. Definitions of jurisprudence, law, right, etc.; leading classifications of law and rights; the relations of private, public, and international law. Two hours a week. Professor DRAKE.

Mining Law.—The discovery and location of lode and placer claims under the mining laws; assessment work; extra-lateral rights; adverse claims; mining claims and other public-land rights; mining partnerships. (Given in 1916-1917, and alternate years thereafter.) Cases. Three hours a week. Professor HOLBROOK.

Mortgages.—Real property mortgages; essential elements of the mortgage; nature and incidents of the mortgage relation; extent of the mortgage lien; priorities, including the operation of the recording acts; redemption and foreclosure; assignment of mortgages; conveyance of the equity of redemption, and marshalling. Cases. Two hours a week. Professor DURFEE.

Municipal Corporations.—Creation and control of public corporations; constitutional limitations concerning the same; powers, including police powers, control of streets and highways, taxation and assessments, eminent domain, corporate powers; municipal securities, charters, ordinances, liabilities, and duties. Text-book and cases. Two hours a week. Professor STONER.

Partnership.—Text-book and cases. Two hours a week. Professor DRAKE.

Patent Law.—The fundamental principles, development, and interpretation of the statutes allowing special rights to inventors; the application of the law in findings of fact and a general survey of the procedure in suits on patents. Cases. Two hours a week. Professor WAITE.

Procedural Reform.—A comparative study of modern procedural reforms. This course will include an analysis of the present English system, the New Jersey Practice Act, and the Chicago Municipal Court Act, and a comparison of these with the Common Law and Code systems and with the more important systems of Continental Europe. Two hours a week. Second semester. May be elected by third year men only. (Given in 1916-1917.) Professor SUNDERLAND.

Property IV.—Validity, interpretation, and waiver of conditions; validity of future interests in personal property; how far future interests in land void or defeasible at common law are now good; rules to determine when interests by deed or will in land or goods vest; effect on a gift of the failure of the gift intended to precede or follow it; whether one dying before or born after takes under gift to "children" or the like; nature, operation and extinguishment of testamentary powers, and effect of defective, excessive, or lapsed appointments, or death of one intended to appoint or be appointed; validity of devises, legacies, and appointments that may vest at a remote future day. Cases. Four hours a week. Professor ROOD.

Public International Law.—The work in international law is conducted principally by means of classroom discussion. The work of the first half-semester comprises a general view of the elementary principles of the subject by text-book and informal lectures, and the investigation and discussion of international incidents. The work of the second half-semester is devoted to a consideration of the leading cases in international law, English and American. Three hours, first semester. Professor REEVES.

Public Officers and Extraordinary Legal Remedies.—These subjects are treated in one course, as cognate to and supplementary of each other, the case selected at the same time developing the law of extraordinary legal remedies and illustrating the law of public officers. Nature of office; eligibility; appointment and election; acceptance; qualifying; officers *de facto;* validity of contracts concerning offices and officers; resignation; removal; acceptance of incompatible office: rights, duties, and liabilities of officers. Mandamus; quo warranto; prohibition; certiorari; procedendo; habeas corpus. Cases. Two hours a week. Professor STONER.

Public Service Law.—A study of the rights, duties, and regulation of utilities affected with a public interest, including valuation and rate regulation, but excluding the law of common carriers in so far as it has been treated in the course in Bailments and Carriers. Cases. Two hours a week. Professor GODDARD.

Quasi-Contracts. — The doctrine of unjust enrichment — recovery of benefits conferred under various forms of constraint and mistake, and in performance of contracts which are unenforceable by reason of illegality, the statute of frauds, impossibility of performance or breach; waiver of tort and restitution as a remedy for breach of contract. Cases. Two hours a week. Professor DURFEE.

Roman Law.—A sketch of the history of the Civil Law, together with an outline of the fundamental principles of the Justinian Code. Sohm's Institutes of Roman Law. Two hours a week. Professor DRAKE.

Sales and Personal Property.—Sale and contract to sell; Statute of Frauds; conditions and warranties, and remedies for breach thereof; delivery; acceptance and receipt; seller's lien; stoppage *in transitu;* bills of lading and *jus disponendi;* factor's acts. Text-book and cases. Three hours a week. Professor WAITE.

Suretyship.—Lectures and cases. Two hours a week. Professor BUNKER.

Theory and Practice of Legislation.—In this course an examination will be made of the great historical systems of legislation with special emphasis upon the development of legislative processes in England and America. The course is divided into two parts (1) the development of legislative methods and procedure and (2) a critical study of legislative form, the latter being introductory to practical training in bill-drafting. Three hours, second semester. Professor REEVES.

Wills and Administration.—Gifts *causa mortis:* descent and distribution, testamentary capacity; execution; revocation and revival of wills; construction of wills; ademption and lapse of legacies; executors and administrators; payment of legacies; distribution of estate. Cases. Three hours a week. Professor ROOD.

SPECIAL COURSES

The following courses of special lectures, given at intervals during the year, are open to members of the second and third year classes:

Admiralty Law.—Mr. CANFIELD.
Copyright Law.—Mr. REED.
Legal Ethics.—Mr. MAXWELL.
Medical Jurisprudence.—Dr. VAUGHAN and Mr. LIGHTNER.
Michigan Statute Law.—Mr. BOUDEMAN.
Roman Law, Advanced Course.—Professor DRAKE.
Statute Law.—Mr. BOUDEMAN.
Trade-mark Law.—Mr. ROGERS.

FOUR YEAR CURRICULUM

After most careful consideration the Faculty has decided to offer an optional four year curriculum in law beginning with the university year 1916-1917. This is regarded as a most important advance in legal education. The rapidly expanding field of law, including the rise of some practically new topics, and the more thorough methods of legal instruction required by modern conditions, have imposed a difficult problem upon law faculties. It has been found increasingly difficult and indeed impossible to cover adequately even all the important subjects in law in a three year curriculum. The Law School of this University is now offering six years of law work, that is to say, a student taking the maximum number of hours a semester would find it necessary to remain here six years in order to take all of these courses. Of the work thus offered more than three-fourths is of strictly professional character and is exclusive of narrow special topics. In a period of three years a student can take somewhat less than two-thirds of this general professional law study. There is an obvious disadvantage in this situation. Law schools have been endeavoring to meet the problem by means of the elective system and have been obliged to proceed upon the theory that three years of training would enable the student subsequently to master those subjects which he had not been able to take in the law school. But the undoubted fact is that even the most earnest student will not under any ordinary conditions obtain so thorough and scientific a knowledge of subjects taken up by him after he has left the law school. In the great majority of cases law school graduates are too much occupied after graduation with other affairs to pursue even a single subject in the systematic and thorough way in which the subjects are covered in a good law school. The result is that law graduates enter the practice with only a partial knowledge of the field of law. Medical schools now require four years of study and are about to insist upon a fifth year before the degree may be granted. There is no good reason why law students should not devote the same amount of time to the mastery of their difficult and technical profession.

The adding of the fourth year will enable the student more nearly to cover the important topics in the law, to make some comparative study of different systems, and to obtain a more comprehensive and thorough grasp of practice. Additional courses for the last named purpose will be announced in this School, in the near future.

For the reasons thus indicated all students who find it possible to give four years to law study are strongly urged to do so. By attendance during three summer sessions the student may diminish the elapsed time by one year. *Thus by beginning with a summer session and studying during the two following summer sessions a student may complete the four year curriculum and receive his degree at the end of the third university year.*

FOURTH YEAR CURRICULUM

The degree of Master of Laws is conferred upon persons holding the degree of Bachelor of Laws, granted by this University or by any approved Law School, provided that the applicant has maintained a high standard of scholarship in the law school from which he obtained his degree, and has completed a fourth year of law study as prescribed by the Faculty.

Graduates of the Law School of the University of Michigan will be admitted as candidates for the degree of Master of Laws only upon obtaining permission of the Dean. Those who have received their degrees from other law schools must present certificates from such schools showing in detail the courses taken and the scholarship grades obtained in each course, and must, in addition, present a statement from the Dean, or other officer of such school, to the effect that the applicant is qualified to pursue further work in law and is recommended therefor. This may be in a separate communication, or in the certificate above referred to. It is proposed to admit to the course only those students whose records indicate that they are above mediocrity and will derive genuine benefit from further law work.

Candidates for the degree of Master of Laws shall take not less than ten nor more than twelve hours of work each semester. This work shall be elected:

(a) from courses given in this school for which the candidate has not already received credit, if he be a graduate of this school, and of which he has not the equivalent, if he be a graduate of any other law school. All candidates for this degree shall be required to take the courses in Roman Law and in the Science of Jurisprudence, provided they have not received credit for said courses of their equivalents. And,

(b) from courses offered by the College of Literature, Science, and the Arts, directly connected with or collateral to some phase of the law. Such courses as the two in Public International Law (6 hours), Constitutional History of the United States (6 hours), Constitutional History of England (6 hours), and certain courses in Economics are of the types preferred.

At least fifty per cent. of the work must be elected from courses given in this school, porvided, however, that in special cases permission of the Faculty may be granted to vary from this requirement.

The following courses offered in this school are open only to graduate students.

History of English Law.—A survey of the History of English law, beginning with a brief treatment of the Anglo-Saxon period and thence down to the Nineteenth Century, concluding with a consideration of the reception of the common law into the United States. Lectures, assigned readings, and reports. Three hours a week, first semester. Assistant Professor BARBOUR.

History of English Law.--This course will be a study of some particular period or of some doctrine of the common law each year. For the year 1917-1918 the subject is the History of Contract in English law, with special reference to the development of the doctrine of consideration. This course will be based upon a study of the Year Books, reported cases and other source materials and upon treatises and articles. Three hours a week, second semester. Assistant Professor BARBOUR.

The Elements of Roman Law.—Lectures and recitations. An outline of the fundamental principles of Roman Law as given in the Institutes of Caius and of Justinian. Special emphasis will be placed on points of Roman Law which illustrate principles of English Law. Two hours a week, second semester. Professor DRAKE.

History of Continental Law.—A general survey of the history of the legal systems of the states of Continental Europe. Professor DRAKE.

Roman Law.—Selected Titles of the Digest. Readings, interpretations, and critical discussion of

(a) *De Acquirendo Rerum Dominio,* XLI, 1; *De Adquirenda vel Amittenda Possenione,* XLI, 2. Two hours a week, second semester. Professor DRAKE.

(b) *De Obligationibus.* Two hours a week, second semester. Assistant Professor BARBOUR.

History of Legal Philosophy, Proseminary.—A study of the chief schools of legal philosophy of ancient, medieval, and modern periods. Two hours a week. Professor DRAKE.

THE PRACTICE COURT

It has been an objection frequently urged against the completeness of the training given in law schools that the students acquire no knowledge of actual practice. This objection has been largely removed by the introduction into this school of the Practice Court. The Practice Court is a part of the school, and is presided over by the Professors of Practice, while the other members of the Faculty co-operate in conducting it. Its work is divided into three parts, that of the law term, that of the jury term, and that of the appellate jurisdiction. The court is provided with a full corps of officers, including the member of the Faculty who may sit from time to time as a presiding judge, the full bench of judges sitting as a Supreme Court, a clerk, a sheriff, and the necessary deputies. Ample and commodious rooms have been provided for the use of the court, including a court room furnished with the fittings necessary for the trial of jury cases, and a clerk's office. The latter is provided with the books and records used in actual practice.

The purpose of the court is to afford to the student practical instruction in pleading and practice both at law and in equity, under the common law system and the "code" or "reformed" procedure, and actual experience in the commencement and trial of cases through all their stages. In commencing the actions, the students assigned to the case are permitted to select the state in which the action is supposed to be brought, thus enabling the student to acquire the practice as prevailing in his own state. All questions of practice, pleading, and procedure are governed by the law of the state in which the action is so laid, but questions of substantive law are determined according to the weight of authority.

Two classes of cases are presented:

First.—Cases arising upon given statements of fact, prepared and assigned by the Professors of Practice, upon which process is to be issued, pleadings are to be framed, and the cause conducted to an issue, when it is argued and disposed of as a question of law upon the facts submitted. This class of cases affords the student practical experience in the commencement of suits, the preparation of pleadings, and the argument of the questions of law arising upon the facts. The practice and pleadings are under the common law or the code procedure, as the student may elect. There are three public hearings in this course. *a.* The questions arising upon the pleadings are argued and disposed of at a regular session of the court presided over by the Professors of Practice. *b.* After the case is at issue the pleadings are carefully examined by one of the Professors of Practice, and are discussed and criticized in detail with the men who drew them, and amendments are required whenever deemed advisable. *c.* After the pleadings have been approved, the case is set down for a separate hearing upon the questions of law. This argument is heard by some member of the Faculty to whom an exhaustive brief on the law of the case must at the same time be submitted.

Second.—Actual controversies are arranged and assigned for trial as issues of fact. The course includes the entire conduct of an actual case from its beginning to a final judgment. This involves the issue of proper process, the preparation and filing of appropriate pleadings, the subpœnaing of the witnesses, the impaneling of a jury, the examination and cross-examination of witnesses, the arguments to the court and jury, and all other incidents of contested trial.

For the purpose of this work, the class is divided into sections, and the work of attorneys, witnesses, jurors, and the like, is performed by the students. A member of the Faculty presides on the hearing or trial of each case, and it is conducted with all the dignity and decorum of actual practice.

DEBATING AND LITERARY SOCIETIES

There are two flourishing literary societies—the Webster and the Jeffersonian—established and conducted by the students of Law for the purpose of acquiring skill in debating.

MICHIGAN LAW REVIEW

THE MICHIGAN LAW REVIEW is a legal periodical conducted under the auspices of the Law School. It is edited by a member of the Law Faculty, assisted by a Faculty Advisory Board, but all members of the Faculty co-operate in conducting it. Students selected from the Third Year Class, act as editorial assistants.

The purpose is to give expression to the legal scholarship of the University, and to serve the profession and the public by timely discussion of legal problems, and by calling attention to the most important developments in the field of jurisprudence.

The REVIEW is made up of four chief departments: First, leading articles upon important and interesting legal subjects; second, notes and comments upon current topics and significant occurrences in the legal world; third, abstracts and digests of the most important recent cases; and fourth, reviews of books and comments on legal literature.

It is the aim to make the REVIEW practical without usurping the functions of the text-book or the digest, and scholarly without being so academic in character as to be out of touch with the needs and aims of the lawyer of today. It contains about eighty pages in each issue, and regularly appears on the first of each month during the academic year. The enterprise is in no sense conducted for the pecuniary benefit of those engaged in it, or any of them. All profits which may accrue, are devoted to the improvement of the magazine, and the promotion of the welfare of the Law School.

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

For the rules governing participation in public activities see pages 86 and 87.

FEES AND EXPENSES

The Matriculation Fee and the Annual Fee must be paid in advance, and no student can enter upon his work until after such payment. For the rules governing Second Semester fees and the refunding of fees see page 101.

Matriculation Fee.—For Michigan students, *ten dollars;* for all others, *twenty-five dollars.*

Annual Fee.—For Michigan students, *sixty-seven dollars;* for all others, *seventy-seven dollars.*

Graduation Fee.—For all alike, *ten dollars.*

For additional information in regard to expenses, see page 99.

College of Pharmacy[*]

A special Announcement giving further information in regard to this College is published annually. For copies of this Announcement, or for other information relating to the school, address The College of Pharmacy, Ann Arbor, Michigan.

The College of Pharmacy gives training for all branches of pharmacy and for various chemical pursuits. It provides a well-grounded preparation for service as a manufacturing chemist, or as an analyst. The graduate is assured a thorough qualification for the prescription table and for the most responsible positions in pharmacy. He is fitted to act as chemist to the medical profession. He is in a position to meet the wants of manufacturers of foods and drugs, who guarantee the quality and strength of their products. In respect to the discipline of both the intellectual and the executive powers, the work of the school offers decided advantages, in the steady requirement of severe studies, and of exact operations on the part of each student.

The college year extends from the Tuesday preceding the first Thursday in October to the last Thursday in June (October 2, 1917, to June 27, 1918). Students of the first year are released the second Friday before Commencement.

For the full regular work, admission cannot be granted at any other time than at the opening of the first or the second semester (February 11, 1918), as students are instructed in classes in progressive order. For investigation, or special studies, students can be received at any time when there is room in the laboratories. Many of the subjects taught in the College can also be taken in the Summer Session of the University (see a subsequent chapter).

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[*] **Formerly known as the School of Pharmacy.**

REQUIREMENTS FOR ADMISSION

Applicants for admission as undergraduates must be at least sixteen years of age, and must have completed the requirements for admission as here described. These requirements are stated in units, a unit meaning the equivalent of five recitations a week in one branch of study for one year, amounting in the aggregate to not less than one hundred twenty sixty-minute hours in the clear. Two to three hours laboratory, drawing, or shopwork, will be counted as equivalent to one of recitation.

(A) Fifteen units are required for admission. These fifteen units must include three units of English Composition and Literature, two units of a Foreign Language, one unit of Algebra and one of Geometry, and one unit of Physics, and may include not more than three units from Group II. They must embrace two subjects of three units each from Group I. It is, however, strongly recommended that one or more studies be pursued throughout the four years of the high school course.

It is strongly advised that one unit of Chemistry be included among the subjects offered. Otherwise the student may find it necessary to attend during a Summer Session in order to carry out the sequential curricula outlined for the second, third, and fourth years.

The subjects from which choice may be made, and the number of units which will be accepted in each subject, are as follows:

Group I

English Composition and Literature, 3 or 4 units.
Greek, 2 or 3 units.
Latin, 2, 3, or 4 units.
French, 2, 3, or 4 units.
German, 2, 3, or 4 units.
Spanish, 2, 3, or 4 units.
History, 1, 2, or 3 units.
Algebra, 1, 1½, or 2 units.
Geometry, 1 or 1½ units.
Trigonometry, ½ unit.
Chemistry, 1 unit.
Botany, ½ or 1 unit.
Zoology, ½ or 1 unit.
Physiology, ½ unit.
Geology, ½ unit.
Physiography, ½ or 1 unit.

Three units of science may be offered as a three-unit subject.

In order that a half unit in science may be accepted it must be supplemented by a second half unit in science. For this purpose the following groupings are suggested: (a) Botany and Zoology; (b) Zoology (or Botany) and Physiology; (c) Physiography and Geology; (d) Physiography and Botany.

Two units of Mathematics and one unit of Physics may be offered as a three-unit subject, in which case a second unit of science must be presented.

Group II

Agriculture, 1 or 2 units.
Domestic Science, 1 or 2 units.
Drawing, ½ or 1 unit.
Manual Training, 1 or 2 units.
Commercial Branches, 1 or 2 units.

Subjects from Group II will not be accepted for admission on examination.

(B) Graduates of schools on the approved list of the North Central Association of Colleges and Secondary Schools will be admitted upon the presentation of an unqualified recommendation covering not less than fifteen units, of which at least twelve must be from Group I. Admission on this basis of recommendation may be granted also to the graduates of other especially approved high schools.

Credentials, in order to be recognized must be sent by the superintendent or principal directly to the Dean. This may be done at any time of the year upon the appropriate blank furnished by the Dean.

From Colleges.—Students who have completed at least one year's work in an approved college of literature and science, and who bring explicit and official certificates describing their course of study and scholarship, and testifying to their good character, are admitted without examination.

ADMISSION TO ADVANCED STANDING

Students who have gained admission to the college may apply for credit in any of the college studies which they have pursued in another college, or in a high school whose graduates are admitted. Such application should be made to the Dean at the time of entering the School, and may be referred to the professor in charge of the studies in which credit is asked. Applicants are required to bring explicit credentials as to the work done. *Credits from other Colleges of Pharmacy are adjusted separately for each study. Owing to difference in the order and extent of the studies, credits cannot be counted in years of pharmaceutical college study.* Applicants by correspondence before the opening of college, may have their credentials acted upon for advanced standing. One year's residence in this University is required before graduation.

Credits are received from the other colleges, and from the Summer Session of this University.

ADMISSION OF STUDENTS NOT CANDIDATES FOR A DEGREE

Persons over nineteen years of age who bring evidence of having been engaged in the practice of pharmacy for at least two years, may be admitted to pursue selected studies upon passing an examination in writing, spelling, use of capitals, and grammatical construction. The same privilege is accorded to persons over twenty-one years of age who have not had practical experience and who are able to study with advantage in the college, the same examination being required as to the correctness of English writing.

Students admitted under the above provisions are not, however, regarded as candidates for a degree, and they do not become eligible for graduation until they have passed all the examinations for admission to the College.

Students not candidates for a degree may elect such studies as they are prepared to pursue, under the regulations of the Faculty. Selected studies may be continued as long as, in the judgment of the Faculty, they are carried with success and profit.

APPLICANTS FOR ADMISSION

Applicants arriving in Ann Arbor should call either at the office of the Dean, room 252, or at the office of the Secretary, room 362, in the Chemistry and Pharmacy Building.

REGISTRATION—IMPORTANT

All students in the College of Pharmacy are required, at the beginning of each year of residence, to enroll with the Dean, to pay their fees to the Treasurer of the University, and to file with the Secretary of the College of Pharmacy an election blank properly filled out, showing the courses they expect to pursue during the semester. These three things shall be considered as constituting Registration in this College.

All students entering this College for the first time must present their credentials either to the Dean or to the Secretary of the College of Pharmacy and secure an admission card before enrolling.

ELECTION OF STUDIES

The election blanks of all students must be presented in person to the Secretary of the College of Pharmacy before 6 P. M. of the first Wednesday after the opening of the first semester, and before 6 P. M. of the first Saturday preceding the opening of the second semester.

They can be presented after these dates only upon payment of $1.00.

Elected studies cannot be dropped without the permission of the Dean. No credit is given for courses not properly elected.

Elections may be changed during the first week of each semester.

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

For the rules governing participation in public activities see pages 86 and 87.

COURSES OF INSTRUCTION

The courses of instruction comprise lectures, recitations, and laboratory work. The amount of work in each course is expressed in hours, an *hour* signifying one exercise a week during one semester. A lecture or recitation is usually one hour in length. A laboratory exercise occupies approximately three or four hours, being continued until the work assigned to one exercise, or a due proportion of work assigned to the course, has been completed. The satisfactory completion of one exercise a week during one semester, including a sufficient standing in the examination held at the end of the semester, entitles the student to *one hour of credit* toward graduation. It is expected that a lecture or a recitation with the personal study necessary to maintain the student's standing in the subject, will take in all as much as a laboratory course. Therefore an *hour of credit* is regarded as having the same value whether obtained in a course of lectures or in a course of laboratory exercises.

The amount of credit toward graduation is indicated by the expressions: *two hours, three hours,* etc.

BACTERIOLOGY

2. Bacteriology. Lectures. *Five hours.* Fee $15. Second semester. Professor NOVY.

3*a*. Bacteriology. Laboratory work daily for twelve weeks. Begins about the first of December and ends about the first of March. *Three hours.* Professor NOVY and Assistant Professor DE KRUIF.

BOTANY

5. Pharmaceutical Botany. Lectures and laboratory. *Two hours.* Fee $2. First semester. Professor GLEASON.

NOTE.—Additional courses in Botany are given in the announcement of the College of Literature, Science, and the Arts.

BUSINESS ADMINISTRATION

38*p*. Elements of Accounting and Business Methods. Lectures, recitations, and laboratory practice. *Two hours.* Second semester. Mr. RODKEY.

CHEMISTRY

A and A1. Inorganic Chemistry, Descriptive and Experimental. Lectures and laboratory. *Six hours.* Fee $10. First semester. Professor LICHTY and Mr. RICHTIG.

3p. Qualitative Analysis. Lectures and recitations. Laboratory work. *Seven hours.* Fee $15. First or second semester. Mr. MCALPINE and Mr. SOULE.

4. Pharmaceutical Chemistry. Lectures and recitations. *Two hours.* Fee $1.50. Second semester. Mr. ATKINSON.

5. Quantitative Analysis. Lectures, recitations, and laboratory. *Five hours.* Fee $15. First or second semester. Assistant Professor WILLARD and Mr. PINKERTON.

7. Organic Chemistry. Lectures, recitations, and laboratory. *Five hours.* Fee $10. First semester. Professor GOMBERG, Mr. SCHOEPFLE, and Mr. SHERRARD.

Those electing Course 7 should elect *7a* the following semester, as they constitute one course extending throughout the year.

7a. Organic Chemistry. Continuation of Course 7. Lectures, recitations, and laboratory. *Four hours.* Fee $10. Second semester. Professor GOMBERG, Mr. SCHOEPFLE, and Mr. SHERRARD.

8. Elementary Theoretical and Physical Chemistry. Lectures and recitations. *Four hours.* Professor BIGELOW.

10. Organic Chemistry. Lectures and recitations. *Four hours.* Second semester. Professor GOMBERG.

11. Organic Chemistry. Lectures and recitations. *Three hours.* First semester. Mr. SHERRARD.

13. Physical-Chemical Measurements. Laboratory work. *Three to eight hours.* Fee $15 up. Either first or second semester. Dr. BARTELL.

15. History of Chemistry and Development of Chemical Theory. Lectures and seminary. *Two hours.* Either first or second semester. Professor SMEATON.

42. Organic Chemistry. Laboratory work in organic synthesis. *Two hours.* Fee $10. Either first or second semester. Mr. SHERRARD.

44. Organic Analysis. Lectures, recitations, and laboratory. *Four hours.* Second semester. Professor SCHLOTTERBECK and Mr. REVENO.

44*a*. Analysis of Foods, Drugs, etc. Laboratory work with collateral reading. *Three or five hours.* Fee $10 to $15. Professor SCHLOTTERBECK and Mr. GLOVER.

44*b*. Analysis of Foods, Drugs, etc. Continuation of Course 44*a*. *Three or five hours.* Fee $10 to $15. Second semester. Professor SCHLOTTERBECK and Mr. GLOVER.

NOTE.—A more complete list of courses in Chemistry which are open to students of the College of Pharmacy may be found in the announcement of the College of Literature, Science, and the Arts.

MINERALOGY

1. Elements of Mineralogy. Lectures and practice. *Two hours.* Either First or Second Semester. Professor KRAUS.
   Course 1 should be preceded by a course in general chemistry.
2. General Mineralogy. Lectures and practice. *Five hours.* Second semester. Professor KRAUS.
   Course 2 should be preceded by Courses 2 and 3 in chemistry.

PHARMACOGNOSY

1. Microscopy of Foods, Drugs, Spices, etc. Lectures and laboratory. *Four hours.* Second semester. Professor SCHLOTTERBECK, Mr. GLOVER, and Mr. BROWN.
2. Study of Crude Drugs. Lectures, recitations, and practical exercises. *Four hours.* First semester. Professor SCHLOTTERBECK and Mr. BROWN.

PHARMACOLOGY

1. Materia Medica and Therapeutics. Lectures and recitations. *Four hours.* Second semester. Dr. EMERSON.
2. Physiological Assay of Drugs. Professor EDMUNDS.

PHARMACY

1. Theoretical Pharmacy and Pharmaceutical Arithmetic. Lectures and recitations. *Four hours.* First semester. Mr. GLOVER.
2. Commercial Pharmacy. Lectures and recitations. *Two hours.* First semester. Professor STEVENS.
3. Drug Assaying and Pharmacopœial Testing. Lectures, recitations, and laboratory. *Four hours.* Fee $15. First semester. Professor STEVENS and Mr. OELLRICHS.
4. Prescription Reading and Incompatibilities. Lectures and recitations. *Three hours.* First semester. Professor STEVENS.
5. Prescription Practice. Compounding of prescriptions as met with in general practice. *One hour.* Fee $2. Second semester. Professor STEVENS.

6. Study of the United States Pharmacopœia and the National Formulary. Lectures and recitations. *Four hours.* Second semester. Mr. GLOVER.
7. Pharmaceutical Technic and Manufacturing Pharmacy. Laboratory work. *Seven hours.* Fee $20. Second semester. Professor STEVENS, Mr. OELLRICHS, and Mr. REVENO.

PHYSICS

1. General Physics. Mechanics, Sound, and Heat. Lectures and recitations. *Four hours.* First semester. Professor RANDALL.

   For Course 1 a knowledge of plane trigonometry is indispensable.
2. General Physics. Magnetism, Electricity, and Light. Lectures and recitations. *Four hours.* Second semester. Professor RANDALL.

   Course 2 must be preceded by Course 1 and by a course in general chemistry.

PHYSIOLOGICAL CHEMISTRY

1. Physiological Chemistry including Analysis of Urine. Laboratory work and quizzes. *Three hours.* Fee $15. First semester. Professor NOVY. Course 1 is given twice, during the first semester only, each class working for nine weeks.

EXAMINATIONS

The examination upon each course of instruction is held at the end of each semester, in February and in June.

The result of an examination is reported by the Professor in charge, for each student enrolled, to the Faculty, in terms as follows:

A (excellent), B (good), C (satisfactory), D (deficient), E (not passed).

To receive credit in a course the grade reported must be above D. A student reported E (not passed) receives no credit for the course and must re-elect it at the first opportunity if the course is required for his graduation.

A student reported D (deficient) is required to do further work in the course; this may, at the option of the instructor, embrace any or all of the following requirements: the completion of set exercises or problems, attendance at designated classes and private study, or the completion of a satisfactory examination at one of the regular examination periods.

Absent.—With statement of the cause of absence; if the student has left the class, stating at what time; or stating if absent without excuse or explanation.

Experience in the business of pharmacy is not made a requirement for a degree.

SEQUENCE OF STUDIES

NOTE.—The italic letter which follows the name of a subject denotes the college in which it is offered. For information concerning any subject the student should consult the bulletin or announcement of the college indicated: *p* denotes College of Pharmacy; *a* College of Literature, Science, and the Arts; *e* College of Engineering; *m* Medical School.

Information concerning the courses mentioned in these schedules may be found in the preceding pages.

I. TWO YEAR CURRICULUM

Leading to the Degree of Graduate in Pharmacy.

(This curriculum will be discontinued after the college year 1917-1918.)

First Year

FIRST SEMESTER	Course	Hours	SECOND SEMESTER	Course	Hours
Chem. (Gen.) *p*	A & A1	6	Chemistry (Qual.) *p*	3*a*	4
Pharmacy *p*	1	4	Pharmacognosy *p*	1	4
Botany (Pharm.) *p*	5	2	Hygiene, *m*	1	3
Pharmacy (Com.) *p*	2	2	Accounting, *p*	38*p*	2
			Chemistry (Pharm)	4	2
		14			15

Second Year

FIRST SEMESTER	Course	Hours	SECOND SEMESTER	Course	Hours
Chemistry (Quant.) *p*	5	5	Pharmacy (Mfg.) *p*	2	7
Pharmacy (Pres.) *p*	4	3	Pharmacology, *p*	1	4
Chemistry (Organ.) *p*	11	3	Pharmacy (Pres. lab.) *p*	5	1
Pharmacognosy, *p*	2	4	Pharmacy (U. S. P.) *p*	6	4
			Chemistry (Pharm.) *p*	4	2
		15			18

II. THREE YEAR CURRICULUM

Leading to the Degree of Pharmaceutical Chemist.

First Year

FIRST SEMESTER	Course	Hours	SECOND SEMESTER	Course	Hours
Chem. (Gen.) *p*	A & A1	6	Chemistry (Qual.) *p*	3	7
Botany (Pharm.) *p*	5	2	Pharmacognosy, *p*	1	4
Pharmacy *p*	1	4	Hygiene, *m*	1	3
Rhetoric, *e*	1	4	Accounting, *p*	38*p*	2
		16			16

Second Year

FIRST SEMESTER

	Course	Hours
Chemistry (Quant.) *p*	5	5
German, *e* or *a*	1	4
Pharmacognosy, *p*	2	4
Elective		3
		16

SECOND SEMESTER

	Course	Hours
Pharmacy (Mfg.) *p*	7	7
Bacteriology, *m*	2	5
German, *e* or *a*	2	4
		16

Third Year

FIRST SEMESTER

	Course	Hours
Chemistry (Organ.) *p*	11	3
Chemistry (lab.) *p*	42	2
Pharmacy (Pres.) *p*	4	3
Pharmacy (Assay) *p*	3	4
Mineralogy, *p*	1	2
Elective		2
		16

SECOND SEMESTER

	Course	Hours
Pharmacology, *p*	1	4
Pharmacy (Pres. lab.) *p*	5	1
Pharmacy (U. S. P.) *p*	6	4
Chemistry (Pharm.) *p*	4	2
Chemistry (Alkal.) *p*	44	4
		15

III. FOUR YEAR CURRICULUM

Leading to the Degree of Bachelor of Science (Pharmacy).

First Year

FIRST SEMESTER

	Course	Hours
Chem. (Gen.) *p*	A & A1	6
Botany (Pharm.) *p*	5	2
Pharmacy, *p*	1	4
Rhetoric, *e*	1	4
		16

SECOND SEMESTER

	Course	Hours
Chemistry (Qual.) *p*	3	7
Pharmacognosy, *p*	1	4
Mathematics, *a* or *e*	1	4
		16

Second Year

FIRST SEMESTER

	Course	Hours
Chemistry (Quant.) *p*	5	5
German, *e* or *a*	1	4
Physics, *a*	1	4
Pharmacognosy, *p*	2	4
		17

SECOND SEMESTER

	Course	Hours
Pharmacy (Mfg.) *p*	7	7
Physics, *a*	2	4
German, *e* or *a*	2	4
		15

Third Year

FIRST SEMESTER

	Course	Hours
Chemistry (Organ.) *p*	7	5
Mineralogy, *p*	1	2
Pharmacy (Assay) *p*	3	4
Elective		5
		16

SECOND SEMESTER

	Course	Hours
Chemistry (Organ.) *p*	7*a*	4
Bacteriology, *m*	2	5
Chemistry (Phys.) *p*	8	4
Chemistry (Alkal.) *p*	44	4
		17

Fourth Year

FIRST SEMESTER

	Course	Hours
Chemistry (Phys.) *p*	13	3
Pharmacy (Pres.) *p*	4	3
Chem. (Foods, etc.) *p*	44*a*	
or		
Bacteriology, *m*	3*b*	3
Elective		5
		14

SECOND SEMESTER

	Course	Hours
Pharmacology, *p*	1	4
Pharmacy (Pres.) *p*	5	1
Pharmacy (U. S. P.) *p*	6	4
Chemistry (Pharm.) *p*	4	2
Hygiene, *m*	1	3
Accounting, *p*	38*p*	2
		16

Every candidate for the degree of B.S. (Pharmacy) must elect the subjects printed in Roman type and enough optional courses printed in italics in addition to make in all one hundred and twenty hours of credit. In arranging studies at the beginning of each semester students will please consult the Secretary of the College, Room 362, Chemistry and Pharmacy building.

GRADUATE COURSES

In Pharmacology, Bacteriology, and Physiological Chemistry.—Graduates of the College are given opportunity to pursue advanced work in these studies. See page 394 for courses in Bacteriology and Physiological Chemistry, and page 396 for courses in Pharmacology, which are recommended to graduate students.

For the Degree of Master of Science and Doctor of Philosophy.—Advanced courses of study are offered in the several branches taught in the College, suitable for graduates who wish to earn the degree of Master of Science, or Doctor of Philosophy as explained in the chapter on the Graduate School.

FELLOWSHIPS AND SCHOLARSHIPS

The Prescott Memorial Scholarship.—Alumni and friends of the College of Pharmacy have provided a permanent memorial to the late Doctor Albert B. Prescott in the form of a fund from which loans are to be made to worthy students to assist them in meeting expenses while securing a pharmaceutical education. The fund is already sufficiently large to be available for this purpose, several loans having been made during the past year. Full information concerning the conditions under which loans are made can be obtained by addressing the Dean of the College of Pharmacy.

BOTANICAL GARDEN

In the botanical garden, the principal orders of flowering plants are cultivated, together with the most important of the medicinal species. There are also experimental plantations, where drugs are grown for chemical and pharmacological investigation.

LIBRARY, BOOKS OF REFERENCE, AND TEXT-BOOKS

The College has an extensive library, which is shelved with the Chemical Library of the University, in the Chemistry and Pharmacy building. It contains complete sets of the journals, the original repositories of the sciences related to pharmacy, as well as the current periodicals of the profession, encyclopedias and hand-books of chemistry and pharmacy, and the latest works of value in study. These books are in constant use by students in connection with their laboratory work, and in preparing for their recitations. Files of current numbers of the journals of chemistry and of pharmacy are also kept in the reading-room.

The text-books used can be obtained in the book stores in this university city at lower rates than those prevailing in the general trade of other cities. Since changes are likely to be made in the texts used from year to year it is not desirable to print a tentative list. The texts required in the several courses are announced by the teacher in charge at the first meeting of the class.

FEES AND EXPENSES

The Matriculation Fee and the Annual Fee must be paid in advance, and no student can enter upon his work until after such payment. For the rules governing the refunding of fees and the fees for the second semester, see page 101.

Matriculation Fee.—For Michigan students, *ten dollars;* for all others, *twenty-five dollars.*

Annual Fee.—For Michigan students, *fifty-seven dollars;* for all others, *seventy-seven dollars.*

Graduation Fee.—For all alike, *ten dollars.*

Laboratory Expenses.—These vary with the prudence and economy of the student, the average amount being about one dollar and twenty cents a week.

For additional information in regard to fees and expenses, see page 99.

Homœopathic Medical School*

A special Announcement giving further details in regard to this School is published annually. For copies of this Announcement, or for other information relating to the School address Dr. W. B. Hinsdale, Dean, Ann Arbor, Michigan.

The Homœopathic Medical School, established in 1875, offers the superior advantages that accrue to all parts of a University system. The entrance requirements insure a competent group of students, the courses are thorough, college life is passed among the students and faculties engaged in all fields of culture and in technical and professional training. The School has commodious buildings situated upon University grounds within one minute's walk of the center of the campus.

For the first two years the major part of the students' work is done in the large medical building which contains lecture rooms and laboratories particularly adapted to the teaching of the subjects of Anatomy, Physiology, Pathology, Histology, Bacteriology, and Medical Chemistry; the balance of the instruction, which is almost entirely clinical, is given in the hospital entirely under the management of the Homœopathic staff. The Homœopathic Hospital is one of the finest and best equipped structures connected with the University. Aside from the main hospital building, there is an Administration building for the accommodation of the offices of the Dean, Secretary, Recorder, and Clinical Record Keeper, and the Laboratory of Internal Medicine, a Maternity Home, a General Clinical Laboratory, Nurses' Home, Tuberculosis shacks, etc., all grouped within a radius of three hundred yards.

The instruction in the School is based upon the theory that the Homœopathic principle in therapeutics is scientific and capable of safe and universal application to all classes of patients whether their invalidism arises from infection, accident, follows surgical operations, or is "constitutional."

The academic year extends from the Tuesday preceding the first Thursday in October to the last Thursday in June (October 2, 1917, to June 27, 1918).

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* Formerly known as the Homoeopathic Medical College.

REQUIREMENTS FOR ADMISSION

Every applicant for admission to the Homœopathic Medical School must be at least seventeen years of age, and must present to the Faculty satisfactory evidence of good moral character.

Women are admitted, as to all other schools and colleges of the University, on the same conditions as men.

Two years of collegiate study, beyond the high school, is required for admission. The preliminary years may be taken in the College of Literature, Science, and the Arts of this University or in another university or college of acceptable rank.

GENERAL OUTLINE OF PRE-MEDICAL STUDIES.—This outline is prepared as a model not because it is ideal, but because it embodies all the necessary courses of study that lead to unqualified entrance to a first class medical school. It has been prepared in conference with the Dean and Registrar of the College of Literature, Science, and the Arts, of the University of Michigan. It is believed that it will reasonably fulfill the requirements of the day for more thorough preparation before the student enters upon professional study.

It must be borne in mind that two years of high school or one year of University Latin, University Physics, one year of Biology, two years of Chemistry, a modern language, and English are necessary, as outlined, for unconditional registration. Laboratory work must be included in courses in Physics, Chemistry, and Biology.

Entrance with Conditions.—According to the University system of keeping records, credits are counted by semester hours. Two years' work comprises sixty hours. Therefore to be admitted in full standing, one must have credits satisfying that requirement. If the student be deficient in hours, he may be admitted upon condition. Twelve months are allowed in which to make up the deficiency. This can be done (1) by taking studies in the College of Literature, Science, and the Arts, while pursuing medical study; (2) by studying in the Summer Session following his first regular year in medicine; (3) by attending Summre Session before registering in this School.

Since the Summer Session amply provides for completing them a student may be admitted who is deficient in not more than five hours, provided such deficiency does not include any of the specifically required subjects, viz.:—Chemistry, Physics, Biology, Latin, and a modern language.

Admission on Examination.—Applicants for matriculation who, for any reason, cannot furnish the required credentials may be admitted upon examination. Refer to "Admission on Examination," page 116, and "Admission to Advanced Standing," page 445.

Credits not earned in this University may come from any college or university, of like standing, and should include full work in each of the sciences, Biology, Chemistry, and Physics. A reading knowledge of German or French is very desirable. The following scheme will serve as a guide:

I. Chemistry: General, Qualitative, and Organic. The first two must be and the third should be with thorough laboratory drill.
II. College Physics, with laboratory.
III. General Biology, including both Zoölogy and Botany, with laboratory.
IV. Rhetoric and English Composition.
V. German or French, preferably German.

In all laboratory courses, a well-kept note book is required.

While Chemistry, Physics, and Biology are required, and the languages recommended in the order given, students may, especially if already proficient in a part of the list, select some subjects not mentioned. It is advised that those who take the year of collegiate studies outside the University, communicate with the Dean of the College of Literature, Science, and the Arts, who will be pleased to make suggestions that may be deserving of consideration. Blanks will be furnished upon application, to all who wish to submit for review and evaluation an outline of their preparatory studies.

Further Particulars.—For the purpose of having credits reviewed, for advice as to pre-medical courses, and for special consideration of individual, peculiar, or irregular cases, as soon as one seriously contemplates studying medicine in this school he is advised to communicate with the Dean.

On arriving in Ann Arbor, students should apply at the office of the Dean or Recorder of this school. These offices will be open daily during the latter part of September, and some one who can give information will be in attendance. An inquiry addressed to either the Dean or Recorder of the Homœopathic Medical School of the University of Michigan will receive prompt and cordial attention.

ADMISSION TO ADVANCED STANDING

Persons who have studied medicine elsewhere may be admitted to advanced standing upon evidence of proficiency in the studies which have been pursued already by the class to which they seek admission, provided their credentials for admission to medical college were of equal grade with those of this college at the time when they first registered in medicine, and that the institution from which they come is of approved standing.

The rank of the college from which the credentials are presented will be taken into consideration as well as the letters of honorable dismissal. The rule has been adopted that students are not received who have conditions standing against them in the college from which they come.

ADVICE TO THOSE PREPARING FOR THE STUDY OF MEDICINE

One deciding upon medicine for a professional career will do well to select his high school and college courses with that object distinctively in view. By so doing he will shorten his years of study and also be better qualified to enter upon the medical curriculum. The following high school program is presented as embodying the subjects leading up to the pre-medical college years with which it will correlate very satisfactorily.

A MODEL PRE-MEDICAL HIGH SCHOOL AND COLLEGE CURRICULUM

This outline is not designated *model* because it is ideal, but because it embodies all the necessary courses of study that lead to unqualified entrance to a first class medical school. It is believed that it will reasonably fulfill the requirements of the day for more thorough preparation before the student enters upon professional study.

It must be borne in mind that Latin, Physics, Biology, Chemistry, a modern language, and English are necessary, as outlined, for unconditional registration. The required subjects not being sufficient to round out the curriculum, "electives," subjects in which the student may exercise his individual choice, must be selected from the general University catalogue.

HIGH SCHOOL CURRICULUM

FIRST YEAR	SECOND YEAR
Latin	Latin
English	English
History	Biology
Algebra	Algebra and Geometry

THIRD YEAR	FOURTH YEAR
German or French	German or French
English or Latin	Literature
Geometry	Chemistry
Physics	Trigonometry and Advanced Algebra

ACADEMIC YEARS OF COLLEGE GRADE

First Year

FIRST SEMESTER	SECOND SEMESTER
Rhetoric	Rhetoric
Chemistry, General	Chemistry, General
Biology (Botany and Zoology)	Biology (Botany and Zoology)
German or French	German or French

Second Year

FIRST SEMESTER	SECOND SEMESTER
Chemistry, Qualitative	Chemistry, Organic
Physics, with laboratory	Physics, with laboratory
Electives	Electives

NOTE.—There is opportunity for the student to elect from an optional group of studies to fill out his required number of years. The following subjects are recommended in the order of their preference as electives: psychology, sociology, economics, history, rhetoric, English Literature, and German.

One difficulty experienced by students who have had college courses is that their subjects have not been of the proper selection to prepare them for medical studies. The following subjects are essential, viz: Two years of high school or one year of University Latin —one modern language, German, French, or Italian; Physics, Biology, Chemistry.

Substitutions cannot be made for these four subjects.

Students who cannot arrange to pursue their academic work at this University may do so in some other university or college of acceptable rank.

COMBINED CURRICULA IN LETTERS AND MEDICINE

A.B. AND M.D.

Students desiring to obtain the degrees of Bachelor of Arts in the College of Literature, Science, and the Arts, and of Doctor of Medicine in the Homœopathic Medical School, may, by enrolling on the Combined Curriculum in Letters and Medicine, shorten from eight years to seven the time required to earn the two degrees. This privilege is open only to students who throughout their course maintain a uniform record of good scholarship. The work is under the direction of a Committee of five members representing the College of Literature, Science, and the Arts, and the Homœopathic Medical School. With the consent of the Committee in charge, a candidate for the degree of Bachelor of Arts, who has been a student in the College of Literature, Science, and the Arts, for at least one year, and has 90 or more hours to his credit, of which at least 30 hours have been earned in the College of Literature, Science, and the Arts of this University, may enroll upon the combined curriculum; that is, while continuing his registration in this College he may register in the Homœopathic Medical School, provided the work he has already completed includes a sufficient number of the courses enumerated below to enable him to complete within one year the specific requirements described in the following paragraphs.

Students desiring to enter upon the Combined Curriculum in Letters and Medicine must, before May 15 of the year of residence preceding the double registration, file with the Registrar of the College of Literature, Science, and the Arts a formal application made out upon a proper blank obtained from that office.

When the student so registered in the college and school has completed the first year of the Medical curriculum, and not less than 90 hours in the College of Literature, Science, and the Arts, he will be recommended for the degree of Bachelor of Arts, provided he has completed the requirements for graduation from the latter college (See page 122) and provided his work has included the following courses:

Rhetoric, 6 hours, including Courses 1 and 2.
French and German, 16 hours of either one, and 8 hours of the other.
English, 6 hours.
Psychology, 6 hours.
Electives from Group III, 12 hours, unless excused in part by the Committee.
Physics, 10 hours, including two hours of laboratory work.
Chemistry, general, qualitative, and organic, 12 hours for students presenting Chemistry for entrance, otherwise 16 hours.
Physical Chemistry, 4 hours.
Botany, 4 hours.
Zoölogy, 10 hours.
Total, 82 or 86 hours.

Suggested electives: Latin or Elementary Greek, 8 hours; History, or Economics, or Philosophy, 8 hours; Qualitative Analysis, 4 hours; Organic Chemistry, 5 hours.

B.S. (IN MED.) AND M.D.

Students who so desire, may obtain the degree of Bachelor of Science, in Medicine and Doctor of Medicine in six calendar years by complying with the requirements above set forth, except that they must complete the first and second years of the medical curriculum and that the credit required from the College of Literature, Science, and the Arts, instead of 90 hours, shall be 67 hours before they enroll upon the combined curriculum, and 75 hours before they receive the B.S. (in Med.) degree, and shall include the following courses:

Rhetoric, 6 hours, including Courses 1 and 2.
French or German, 16 hours.
Electives from Group III, 12 hours.
Physics, 10 hours, including two hours of laboratory work.
Chemistry, general, qualitative, and organic, 12 hours for students presenting Chemistry for entrance, otherwise 16 hours.

Biology, 8 hours.
Total, 52 or 56 hours.
Electives are suggested from the courses before mentioned.

Students taking the six-year program will ordinarily need to attend the College of Literature, Science, and the Arts two and one-half years, or two years and two Summer Sessions. If their scholarship is sufficiently high, they may apply for permission to elect a limited number of extra hours.

COURSES OF INSTRUCTION

DESCRIPTION OF COURSES

The university plan is to provide instruction in one college or school that may count for credits in another college or school, thereby avoiding the duplication of teachers and courses. Students studying six years receive much of their instruction in the College of Literature, Science, and the Arts, as previously indicated. Four-year students also receive their instruction in Chemistry in that college and their instruction in Medical Jurisprudence in the Law School. Much of the laboratory and preliminary scientific training is taken with the students in the Medical School. The subjects which are under the immediate charge of members of the faculty of the Homœopathic Medical School are here outlined.

Materia Medica and Therapeutics.—Materia medica is taught as a natural science. Three lectures are given weekly, based as far as possible on studies of the original provings, paying special attention to the genius of each drug, its characteristics, and its relationship to other drugs. The physiological action of drugs, as ordinarily understood, is duly considered.

Systematic instruction in the principles and philosophy of Homœopathy is a natural feature. The course is given to the whole body of students, beginners as well as the more advanced, in order to fix in their minds the underlying principles of the science of homœopathic practice.

A thorough laboratory course in drug proving is a special feature of this School. Students are required to do a certain amount of original work in drug pathogenesy under the supervision of the Director of the Pathogenic Laboratory.

The Principles of Medicine.—The principles of medicine are taught in a separate course setting forth the scientific explanation of disease and the principles upon which a system of cure must be constructed. Attention is given to historic medicine and the various systems that have been in vogue as a means of attempted cure. In the medical clinic the idea is never lost sight of that the function of the physician is to cure the sick, and that to accomplish this end accurate prescribing is of the highest importance.

Theory and Practice.—The instruction in theory and practice is didactic and clinical. The subject is divided into separate courses covering all the ground, both general and special, with which a physician in general practice must be familiar. In this connection a special course in diseases peculiar to childhood, and in the feeding of infants and invalids, is given. The aim is to make the student, by applying his knowledge of pathology, a good diagnostician, and by his knowledge of materia medica, a good prescriber. In the clinics especial attention is given to dietetics and similar means of treatment.

Pediatrics.—Especial attention is given to Diseases of Children in connection with the subject of general medicine. Lectures are given upon the diseases incident to the extremes of life in which the susceptibilities of nurslings and growing children are taught separately. The contagious and infectious diseases peculiar to childhood are considered in the lectures upon Infectious Diseases. A special course upon the Management of Children is given in the Training School for Nurses; the medical students are required to attend certain ones of these lectures. The important subject of Infant Feeding is referred to under *Dietetics*. The hospital contains a special ward for children. 100 hours, lectures and clinics.

Medical and Physical Diagnosis.—Diagnosis is taught as a separate branch. The subject occupies one hour a week throughout two entire years.

In addition to regular class-room work and recitations, the students are divided into sections and examine the patients in the hospital, under the direction of the instructor in charge. Diagnosis clinics, in which all diagnostic means are employed are held regularly.

General Surgery.—The work in surgery follows the following outline:

1. A course of lectures to students in the second year upon minor surgery and bandaging.

2. A course upon the principles of surgery.

3. A complete course upon operative surgery, fractures, and dislocations.

4. An examination and diagnosis clinic is held twice a week for the senior and junior classes. All patients presenting themselves for surgical treatment are examined and a clinical diagnosis made, which is checked up by the subsequent operative and pathological findings.

5. Operations upon the cadaver; a sufficient number of subjects is provided by the authorities without expense to the class. Each

candidate for graduation is required to demonstrate his knowledge of operative surgery in this practical manner.

Students are assigned cases to diagnose and to present to the class. Under proper direction they are required to make the necessary preparations for operations and to assist when assistance is necessary. Advanced students, under the immediate supervision of the surgeon or his assistant, treat patients upon whom operations have been made.

Gynecology.—Gynecology is taught in three courses:—

1. Minor gynecology, dealing with the methods of diagnosis, the use of instruments used in operations, and the technique of operations themselves.

2. Major gynecology, dealing with the graver aspects of the subjects such as adventitious growth, extensive injuries, methods of making gynecological examinations, and the medical and operative treatment indicated.

3. Clinical instruction. The hospital furnishes a superabundance of cases in all kinds of diseases peculiar to women. Each week several major and many more minor operations are performed. The students in this clinic, the same as in general surgery, prepare patients for operations, assist at the operating table, give anæsthetics, and have the after-care of cases and do the necessary surgical dressings, under the direction of the professor himself or of his assistant.

Obstetrics.—Students are taught the physiology of gestation, the pathological conditions that may be encountered in that period and in the puerperium, the principles of cleanliness, the mechanics of parturition and the manipulation of instruments. In the sub-clinics they familiarize themselves with the various methods of practicing "touch" palpitation, obstetric auscultation, etc.

Cases in obstetrics are assigned to each senior for his especial delivery and personal attendance. The many patients that come to the Maternity Home from various parts of the state are utilized to the best possible advantage.

Ophthalmology.—Regular lectures on this important specialty, amply illustrated from the abundance of clinical material at the disposal of the Faculty, are given in the fourth year. The eye clinic forms one of the most interesting features of the clinical work, and affords the class every facility for a thorough, practical study of all the diseases of the eye that come under the observation of the physician. Students have cases assigned them for dressing and treatment, and thus acquire practical skill and knowledge in diagnosis, and in the use of the various instruments. A special course is given in the correction of errors of refraction.

Otology, Rhinology, and Laryngology.—The basis of the instruction, as in other departments will be material that has always been sufficient, afforded by the in and out-patient departments of the hospital. There are, at every clinic, from twenty to thirty patients awaiting medical, topical, or surgical treatments of diseases of the ear, nose, and throat. The students are required to make instrumental as well as other examinations, to make diagnosis, and to indicate the lines of treatment under the supervision of the professor. Regular courses of lectures upon these subjects are given to third and fourth year students.

Mental and Nervous Diseases.—Professor Dewey has been placed in charge of the department of diseases of the nervous system and holds the weekly clinic in that subject. He also gives a practical course upon the various phases of the mentally defective and the insane. There is an abundance of clinical material to demonstrate all the more frequent forms of nervous diseases as well as many of the rarer ones.

Dermatology.—The course in Dermatology consists of lectures, quizzes, and a weekly clinic which is well supplied with material. Photographic, lithographic, and stereopticon plates are used in the differential demonstrations.

The department is well equipped with the latest Roentgen Ray and other electrical appliances, and practical instruction is given in their general and special adaptability to the treatment of malignant diseases of the skin.

Genito-Urinary Diseases.—The instruction includes two distinct courses:

1. A quiz and demonstration course, with weekly recitations.
2. A clinic which is made up of the cases in the hospital requiring either medical or operative treatment. This clinic is quite distinct from any of the other surgical or medical departments, and is given by the professor who also teaches Dermatology, a subject many times involving genito-urinary problems.

Toxicology.—The class is given a practical knowledge of the different poisons and their antidotes. Especial attention is given to the physiological action of drugs and chemicals. The relation existing between drug action in producing abnormal conditions and diseases as they arise from natural or idiopathic causes is constantly kept before the student. This is a new course and a very important one. It really includes very much more than the subject of poisons and antidotes. Whenever a medico-legal opinion is pertinent, it is presented. Illustrations of a practical nature are introduced and experiments on animals employed.

Pharmacy and Pharmacology.—These subjects are largely covered in the departments of Materia Medica, Toxicology, and in the pathogenetic laboratory. Special instruction is also given upon the origin, preparation, and administration of remedies.

Drug Proving.—A practical laboratory in Pathogenetics has been instituted in the hospital, with a special director in charge. Volunteer students, accepted with reference to their physical merit, are put through severe tests under the constant observation of the Director. A diet-table is provided for the provers, free of cost to themselves, that entire control may be had over them while they are testing drugs. As a result of the work done in this laboratory the School has been able to publish a number of instructive, original reports.

Dietetics. — A course is given in which the problems of food in relation to health and disease are discussed. The feeding of invalids and infants is given special attention. In the clinics, whenever the question of the effects of diet, the preparation of foods and drinks, and their proper administration can be profitably considered, the most is made of the opportunity. There is in the hospital a diet kitchen, in charge of a scientific dietitian in which the special diet lists are prepared and from which they are served. The senior students in charge of cases, under proper supervision, are required to make out orders for the feeding of their patients and to observe the preparation of the food.

Electro-therapeutics.—This department receives the prominence that so important a branch of therapeutics deserves.

The aim is to teach theoretically and practically the subject of electricity as it will be employed in the office of the physician in general practice. The use of the X-ray is also included in this department.

The hospital is equipped with much new and special apparatus, which, beside being in constant service is used in a thorough course of instruction, with clinical applications, for the fourth yeyar students.

Demonstration Courses in the Specialties.—Before graduation each student is required to do actual work in demonstrating his medical and surgical skill. By operating upon the cadaver and upon animals; by manipulation of manikins and models; by actual dressing of wounds, and bandaging; by thorough drill in the practical use of the opthalmoscope, the laryngoscope, the test case, and in the fitting of glasses; by the use of the microscope and the spectroscope; by the making of tinctures and dilutions; by bedside demonstrations and examinations; by actual prescribing; by these methods the students become practical and are prepared to make successful physicians. The classes are divided into sections, and each individual has his share of actual work. For these demonstration courses there is no extra expense. Students assist at operations and take turns in ward visiting. They are also required to take, and arrange in writing the histories and to keep the records of patients that are assigned to them in rotation.

These histories are read in the classes, reviewed and corrected by the clinician, and preserved as permanent records of the hospital.

ORDER OF INSTRUCTION

The following summary shows the arrangement of the instruction in the subjects named for the several years and semesters. This order is subject to change, as adjustments of courses and lectures can not always be made to conform to an invariable schedule.

MATERIA MEDICA

1. Materia Medica. Lectures and recitations. Three times a week. Third and fourth years. Professor DEWEY.
2. Therapeutic Principles. Lectures and recitations. Once a week for a semester. First and second years. Professor DEWEY.
3. See Theory and Practice, Courses 4 and 6.

THEORY OF PRACTICE AND DIAGNOSIS

1. Principles of Medicine. Lectures and recitations. Once a week. First year. Professor HINSDALE.
2. Medical Diagnosis. Recitations and demonstrations. Twice a week. Second and third years. Professor HINSDALE.
3. Practice. Lectures and quizzes. Once a week. Third and fourth years. Professor HINSDALE.
4. Treatment. Lectures and quizzes. Once a week. Fourth year. Professor HINSDALE.
5. General Medicine. Clinical Course. Two consecutive hours. Once a week. Third and fourth years. Professor HINSDALE.
6. Bedside Studies, Laboratory Diagnosis and Prescribing. Every day from 8 to 9 a. m. Fourth year students in parties of two. Professors HINSDALE and DEWEY and assistant.

MENTAL AND NERVOUS DISEASES

1. Lectures and Clinics. Once a week. Third and fourth years. Professor DEWEY.

SURGERY

1. Principles of Surgery. Once a week. Second year. Dr. HOLCOMB.
2. Lectures and recitations. Three times a week. Third and fourth years. Professor BEEBE and Dr. NAYLOR.

3. Surgical Demonstrations Upon Cadaver. Class in sections. All day for a week or until work is completed. Second semester. Fourth year. Professor BEEBE and Dr. NAYLOR.

4. Diagnosis Clinic. Two hours. Twice each week. Third and fourth years. Professor BEEBE and Dr. NAYLOR.

5. Surgical Clinic. Three times a week. Third and fourth years. Professor BEEBE and Dr. NAYLOR.

GYNECOLOGY AND OBSTETRICS

1. Minor Gynecology. Lectures and recitations. Once a week. Third year. Professor KINYON.

2. Major Gynecology. Lectures and recitations. Twice a week. Third and fourth years. Professor KINYON.

3. Obstetrics. Lectures and recitations. Twice a week. Third and fourth years. Professor KINYON.

4. Gynecological Clinic. Twice a week. Third and fourth years. Professor KINYON.

OPHTHALMOLOGY

1. Recitations. Twice a week. Third year. Second semester. Dr. IDESON.

2. Advanced work. Lectures and quizzes. Twice a week. Fourth year. First semester. Professor MYERS.

3. Refractions. Class in sections. Fourth year. One hour, twice a week. Professor MYERS.

4. Clinic. General and Operative. One hour. Five times a week. Professor MYERS.

OTO-LARYNGOLOGY

1. Recitations. Twice a week. Second year. Second semester. Dr. IDESON.

2. Recitations. Twice a week. Third year. First semester. Dr. IDESON.

3. Lectures and Quizzes. Fourth year. Twice a week. Second semester. Professor MYERS.

4. Clinic: General and Operative. One hour. Five times a week. Professor MYERS.

DERMATOLOGY

1. Lectures and Recitations. One hour a week. Junior class. Both semesters. Dr. NAYLOR.
2. Clinic. Two hours a week. Junior and senior classes. Both semesters. Dr. NAYLOR.

GENITO-URINARY DISEASES

1. Lectures and Recitations. One hour a week. Junior class. Both semesters. Dr. NAYLOR.
2. Clinic: General and Operative. Two hours a week. Junior and senior classes. Both semesters. Dr. NAYLOR.

ELECTRO-THERAPEUTICS AND RADIOGRAPHY

1. Lectures and Recitations. One hour a week. Senior and junior classes. Second semester. Professor BEEBE and Dr. THOMAS.
2. Clinic. Two hours a week. Senior and junior classes. Both semesters. Professor BEEBE and Dr. THOMAS.

SPECIAL PATHOLOGY

Laboratory Examinations and Analysis. Every afternoon. Class in sections. Six weeks. Two hours. Third year. Mr. VOIGT.

HOSPITAL LABORATORY

Every morning. Specimens from hospitals clinics. Class in sections. One hour. Mr. VOIGT.

PHARMACY

1. Lectures and Recitations. Once a week. Second semester. Second year. Dr. BLINN.

SUBJECTS PURSUED IN CONNECTION WITH CLASSES IN OTHER SCHOOLS OR COLLEGES OF THE UNIVERSITY.

Chemistry (General, Organic, Physiological); Physics; Anatomy; Osteology; Histology; Embryology; Physiology; Bacteriology; Hygiene; Medical Jurisprudence; Organic Evolution; Botany. The instruction in these subjects is given in connection with classes in the Medical School, the College of Literature, Science, and the Arts, and the Law School. The nature, extent, and arrangement of these courses may be seen by reference to other pages of this Catalogue.

EXAMINATIONS

At the end of each semester examinations (written, oral, or both written and oral) are held on all subjects taught during the semester, and each student's grade is entered upon the records of the Faculty in accordance with the following system of marks: A, excellent; B, good; C, fair; D, deficient; E, not passed. Students *"conditioned"* (D grade) cannot apply for another examination in the same subject until the close of the next course or semester, except that a student conditioned at the close of the college year may ask for another examination in the first two weeks of the following year. Students reported *"not passed"* (E grade) are required to take the course over again before applying for another examination.

REQUIREMENTS FOR GRADUATION

To receive the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have completed the required courses in laboratory work, and have passed satisfactory examinations on all the required studies included in the full course of instruction. He must have been engaged in the study of medicine for the period of four years, the last of which must have been in this school.

COURSES FOR PRACTITIONERS

Medical science has made such rapid progress during recent years that graduates of a short time ago feel the necessity of returning to medical centers for supplementary study. The laboratories and special courses of this School offer superior advantages to graduates.

The nature of the work arranged for graduate students in hygiene, bacteriology, pathology, physiology, histology, chemistry, and anatomy may be learned by reference to pages 393 to 399.

In the practical branches, such as materia medica, physical diagnosis, surgery, ophthalmology, otology, laryngology, obstetrics, gynecology, dermatology, electro-therapeutics, and genito-urinary diseases, graduate instruction may be had, by special arrangement with the professors in charge, in connection with the demonstration courses given in the last two years.

OTHER FACILITIES FOR INSTRUCTION

Museums and Laboratories. — The museums of anatomy and materia medica, comprising thousands of specimens, models, and charts, afford the best means attainable for the close study of anatomy, physiology, pathology, and pharmaceutics. The general and special cabinets of the University, containing about 255,000 specimens, are also open freely to all students. (Compare pages 55 to 60). The facilities for the study of chemistry, afforded by the chemical laboratory, are not excelled in any medical college in this country, and the arrangements for the laboratory work are such that medical students, in classes, and working under the direction of the professors in charge, receive practical instruction in the courses in qualitative chemistry, and in the analysis of fluids and secretions of the body, a knowledge of which has become absolutely indispensable to the successful physician. The histological laboratory, amply supplied with microscopes, sphygmographs, stereopticon, etc., offers rare facilities for the prosecution of practical work in experimental physiology and histology. The hygiene and anatomical laboratories are models of convenience, affording facilities for instruction in hygiene and in practical anatomy unsurpassed by those of any other institution of learning in the United States. For a fuller description of the laboratories of the University used by homœopathic students in common with students of other schools and colleges, see pages 60 to 67 and pages 402 to 406.

Pathogenetic Laboratory.—A laboratory of experimental pathogenesy, in one of the Homœopathic buildings is equipped with the necessary apparatus for experimentation with medical substances on the healthy human body, a special feature of this college. Provings are made, and each student is required to do a certain amount of original work and research in the pathogenic field. A complete course in homœopathic pharmaceutics is also given in this laboratory.

Libraries.—The General Library of the University (see page 51), is open to the free use of students. Important additions have recently been made to the collection of works on Homœopathy. A large number of publications, domestic and foreign, are received regularly and kept on file in the library reading room.

Other Facilities.—Students in the school have the privilege of attending the scientific and philosophical lectures, collateral to medicine, given in the College of Literature, Science, and the Arts For a description of the gymnasiums, and the conditions on which they are open to students, see page 72.

THE UNIVERSITY HOMOEOPATHIC HOSPITAL

The University Homœopathic Hospital stands a little to the northeast of the University campus. It has a frontage of two hundred feet, and the ground plan resembles, in general, the letter T. Each end of the top line of the letter represents a ward, and the base is occupied by the operating and clinic rooms. The building extends back over the brow of a hill, and a rear view shows five stories in the clear. The general wards are planned each for sixteen beds. Sun parlors, one in front of each ward, are available as sitting-rooms for patients able to leave their beds. The plumbing is elaborate and of thorough construction. The building is heated by steam, and the ventilating system is guaranteed to change the air in the entire building every five minutes.

There are separate wards for children and for obstetrical patients. The facilities for treating obstetrical cases have been largely increased. During the past year each senior student attended several cases of confinement.

The hospital is furnished with electrical appliances, and, under direction, skilled attendants apply electrical treatment. The junior and senior students receive special instruction in this subject.

Medical, surgical, gynecological, neurological, and ophthalmological clinics are held daily in the spacious amphitheater. Examinations of patients are made by the professors in charge, and by students under the direction of professors and assistants; prescriptions are given; and surgical operations are performed, in the presence of the class. The several clinics are held on separate days, of which the profession throughout the state will be notified at the opening of the University years.

Much attention is paid to physical diagnosis, and the abundance of clinical material furnishes many interesting cases. Students are required to take the history of patients, and, under proper supervision, make personal examinations and prescribe remedies. It is the aim of the Faculty to make clinical instruction systematic and thorough.

The hospital is kept open for patients during the college year, and also during the summer vacation. The expenses to patients are only for their board, for unusual appliances or special nursing, and for medicines, the services of the faculty being rendered gratuitously to those made available for clinical instruction.

Patients who desire to enter the hospital are requested to write to the Medical Superintendent to ascertain if there is room for their accommodation, and to obtain a circular giving more fully the rules governing admission.

Training School for Nurses.—In connection with the Hospital there are two nurses' homes, and a training school under the charge of a competent and experienced principal. For admission is required the completion of a full four-year course in a standard high school. The term of study and service extends through three years of forty-eight weeks each, at the expiration of which time those who have proved competent and trustworthy are granted certificates of graduation. For further information in regard to this school, application may be made to Miss GENEVIEVE REED, Principal, Ann Arbor, Michigan.

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

For the rules governing participation in public activities see pages 86 and 87.

FEES AND EXPENSES

The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. For the rules governing Second Semester fees and the refunding of fees see page 101.

Matriculation Fee.—For Michigan students, *ten dollars;* for all others, *twenty-five dollars.*

Annual Fee.—For Michigan students, *one hundred dollars;* for all others, *one hundred twenty dollars.* This annual fee covers the laboratory and demonstration course fees, formerly charged separately.

Graduation Fee.—For all alike, *ten dollars.*

Summary.—The total amount of fees paid to the University during the whole four years' curriculum in medicine, including fees for matriculation and graduation is, for Michigan students, about $420, and, for others, about $515.

For additional information in regard to expenses see page 99.

Students arriving in Ann Arbor, and desiring further information, should apply at the office of the Dean. The office will be open daily during the latter part of September. Members of the Faculty, or other persons competent to give information will be in attendance.

College of Dental Surgery

A special Announcement giving further information in regard to this College is published annually. For copies of this Announcement, or for other information relating to the College, address, The College of Dental Surgery, Ann Arbor, Michigan.

The College of Dental Surgery was established as a Department of the University in 1875. The college year extends from the Tuesday preceding the first Thursday in October to the last Thursday in June (October 2, 1917, to June 27, 1918). The lectures close about June 16 in order to allow for the final examinations before Commencement.

REQUIREMENTS FOR ADMISSION

Admission to the College of Dental Surgery is granted upon presentation of a certificate from the principal of a high school accredited to this University, recommending the applicant for enrollment and showing that he has been graduated from a full four-year course covering at least fifteen units, each unit representing a subject pursued for one year, with five recitations a week, of not less than forty minutes each.

The fifteen units required for admission must include at least three units in English, two units in Mathematics (elementary algebra and plane geometry), one unit in Physics, one unit in Chemistry, and two units in Latin. The other six units may be selected by the applicant from the following list. The scope of the preparatory work is described on pages 106 to 116.

The subjects from which choice may be made, and the number of units which will be accepted in each subject are as follows:

English Composition, 3 units.
English Literature, 1 unit.
Latin, 2, 3, or 4 units.
French, 2, 3, or 4 units.
German, 2, 3, or 4 units.
History, 1, 2, or 3 units.
Algebra, 1, 1½, or 2 units.
Geometry, 1 or 1½ units.
Trigonometry, ½ unit.
Physics, 1 unit.
Chemistry, 1 unit.
Botany, ½ or 1 unit.
Zoology, ½ or 1 unit.
Physiography, ½ unit.
Drawing, ½ unit.
Manual Training, 1 unit.

All other applicants must pass examinations in the fifteen required units. These examinations are conducted by the College of Literature, Science, and the Arts, in accordance with the schedules printed on page 116. The certificate of admission issued by the College of Literature, Science, and the Arts will then be accepted for admission to the College of Dental Surgery. All applicants for admission must be at least seventeen years of age.

COMBINED CURRICULUM IN LETTERS AND DENTAL SURGERY

Students desiring to obtain the degrees of Bachelor of Arts in the College of Literature, Science, and the Arts, and of Doctor of Dental Surgery in the College of Dental Surgery, may, by enrolling on the Combined Curriculum in Letters and Dental Surgery, shorten from seven years to six the time required to earn the two degrees. This privilege is open only to students who throughout their course maintain a uniform record of good scholarship. The work is under the direction of a Committee of five members, representing the College of Literature, Science, and the Arts, and the College of Dental Surgery. With the consent of the Committee in charge, a candidate for the degree of Bachelor of Arts, who has been a student in the College of Literature, Science, and the Arts for at least one year, and has 90 or more hours to his credit, of which at least 30 hours have been earned in the College of Literature, Science, and the Arts of this University, may enroll upon the combined curriculum; that is, while continuing his registration in this College he may also register in the College of Dental Surgery, provided the work he has already completed includes a sufficient number of the courses enumerated below to enable him to complete within one year the specific requirements described in the following paragraph.

Students who desire to enter upon the Combined Curriculum must, in May of the year preceding double registration, file with the Registrar, on a blank to be obtained from him, a petition to be granted that privilege.

When the student so registered in the two Colleges has completed the first year of the dental curriculum and not less than 90 hours in the College of Literature, Science, and the Arts, he will be recommended for the degree of Bachelor of Arts, provided he has satisfied the requirements for graduation from the latter College, (see page 122), and provided his work has included the following courses:

Rhetoric, 6 hours, including Courses 1 and 2.

French and German, 16 hours of either one, and 8 hours of the other.

Physics, 12 hours, including 4 hours of laboratory work.

Chemistry, general, qualitative, and organic, 14 hours for students presenting Chemistry for entrance, otherwise 18 hours.

Botany, 4 hours.
Zoology, 10 hours.
English, 6 hours.
History, 8 hours.
Total, 84 or 88 hours.

Suggested electives: Latin or Greek, 8 hours; Philosophy, 3 hours; Physical Chemistry, 3 hours.

The foregoing curriculum will undergo modification on account of the lengthening of the Dental Curriculum to four years.

ADMISSION TO ADVANCED STANDING

Persons *qualified for admission* to this college who have studied dentistry in other recognized schools for at least one year, may be admitted to advanced standing, after passing a satisfactory examination in the studies wihch have already been pursued by the class to which they seek admission.

ASSIGNMENT OF SEATS

Students are assigned seats in the lecture room, places in the dental laboratory, and chairs in the operating room, in the order in which they matriculate and register; and each student is expected to occupy the places so selected during the session.

COURSES OF INSTRUCTION

In the arrangement of the course, the aim is to accommodate and benefit students who desire a thorough dental education such as shall meet the expectation of the dental profession, and best serve the interests of the public. To this end a graded course of study is combined with a repetition of such lectures only as will avoid the confusion incident to the simultaneous presentation of too many parts of the general subject. The aim is to dismiss no subject until its relations to other parts of the course can be thoroughly appreciated.

SCHEDULE OF STUDIES*

First Year

FIRST SEMESTER			SECOND SEMESTER		
	Class	Lab.		Class	Lab.
Rhetoric	48		Physics	80	
Inorganic Chemistry	64	128	Dental Anatomy	16	48
Zoology	32	144	Histology	32	160
Dental Anatomy	48	144	General Anatomy		280
	192	416		128	488

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* The columns of figures show the total number of hours required for each course of study.

Second Year

Qualitative Chemistry	32	160	Prosthetic Technics	48	336
Bacteriology		160	Organic Chemistry	80	
Prosthetic Technics	48	272	Physiology	80	
			Dental Histology	16	
			Comparative Anatomy	16	
			Metallurgy		64
	80	592		240	400

Third Year

General Pathology	16		Dental Pathology		40
Dental Pathology	32		Crown and Bridge	32	
Dental Medicine	32		Operative Clinic		280
Hygiene and Prophylaxis	16		Operative Lectures	48	
Prosthodontia	64		Therapeutics	32	
			Metallurgy	32	
Crown and Bridge Technics		160	Surgical Anatomy	16	
Operative Technics		300	Prosthetic and Crown and Bridge Clinic		160
Physiological Chemistry		20			
	160	480		160	480

Fourth Year

Oral Surgery	16	16	Oral Surgery	16	16
Dental Surgery	32		Dental Surgery	32	
Dental Pathology	16		Dental Pathology	16	
Dental Therapeutics	16		Dental Therapeutics	16	
Porcelain	16		Metallurgy	16	
Crown and Bridge	32		Crown and Bridge	32	
Plate and Crown and Bridge Clinic		128	Plate and Crown and Bridge Clinic		128
Metallurgy	16		History and Ethics	32	
Orthodontia	16	16	General Clinics	16	300
General Clinics	16	300			
	176	460		176	444

DESCRIPTION OF COURSES

Rhetoric, Physics, Zoology.—The instruction in the subjects of Rhetoric, Physics, and Zoology is given in the College of Literature, Science, and the Arts (see pages 186, 257, 286). Instruction in these subjects given in other colleges or universities, and accepted for credit by the College of Literature, Science, and the Arts as the equivalent of that given in this University, will be accepted for advanced standing by the College of Dental Surgery.

Anatomy.—Anatomy is studied didactically and practically, and is taken in the Medical School (page 393). Special attention is given to students of dentistry on the anatomy of the head, face, neck, thorax, abdomen, and their contained viscera, and on the nervous and vascular systems. In practical anatomy the same regions are dissected. The work in anatomy also includes a course of lectures on comparative dental anatomy by a member of the Dental Faculty. The large odontological museum, the gift of the late Professor Ford, which has been greatly increased by a gift from Dr. William Mitchell, of London, England, offers exceptional opportunities for this work. There is also a course in human dental anatomy, which is in the nature of a series of quiz and laboratory exercises on technical anatomy, in cutting and studying the structure of human teeth in sections.

Embryology and Histology.—In general embryology and histology a combined lecture and laboratory course is given in which the student not only acquires a knowledge of the principal structures and tissues of the animal body, but also becomes familiar with the manipulation of the microscope and preparation of tissues.

Chemistry.—In chemistry students are required to attend separate lecture courses on general and organic chemistry, and also to take laboratory courses in qualitative and general chemistry.

Physiology.—A full course of lectures in general and special physiology is taken in the Medical School.

Bacteriology.—The course in bacteriology comprises lectures and laboratory work. In the laboratory the student becomes acquainted with technical methods and acquires experience in the biological study of the micro-organisms which are of general and special interest to the dentist.

Materia Medica and Therapeutics.—In dental materia medica and therapeutics a special course of lectures embraces the history, pharmacy, pharmacology, and therapeutics of all drugs and remedies used in the treatment of diseases occurring in dental practice. The course also includes a discussion of pain obtundents, local and general anæsthetics, and prophylactic remedies.

Pathology.—In dental pathology a course of lectures and laboratory work is given, which embraces a discussion of the various diseases which affect the teeth and mouth, and their etiology and treatment. Special attention is given to diseases which pertain especially to the practice of dentistry. Illustrative cases are shown to the class. All instruments, appliances, and methods that are of interest or value in this connection are exhibited and discussed.

Dental Oral Surgery.—Two courses of lectures on clinical dental and oral surgery embrace a consideration of diseases of the teeth and mouth and associated parts that are of special interest to the dentist, as well as those that lie more within the province of the general surgeon for treatment. Illustrative cases are exhibited and discussed, and operations are performed before the class in the Dental and University Hospital clinics each week, and in the Dental clinic each afternoon.

Operative Dentistry.—In operative dentistry the instruction is both didactic and practical. In the didactic course, which is preceded by a course in operative technics, a full presentation of approved methods, appliances, and materials used in filling teeth is given, together with the principles which form the basis of practice. This instruction is supplemented by practical instruction in the clinical operating room, which is under the personal supervision of the professors of operative and clinical dentistry and their assistants. Here each third-year student is required to spend twenty hours each week at the chair, operating for patients, and in this way verifying the principles taught and obtaining such manipulative training as will result in desirable preparation for skillful practice.

Prosthetic Dentistry.—In prosthetic dentistry the instruction is both didactic and practical. In the lectures, the principles involved in the construction and application of artificial dentures, crowns and bridges, regulating devices, and continuous-gum and cleft palate work are fully discussed, and such methods as have proved valuable and worthy are advocated. In the practical department each student in the second and third years has opportunity and is required to construct and adapt to the mouth practical dentures for the restoration of lost dental organs.

The instruction in prosthetic technics embraces experimental construction of the various artificial dentures used to restore lost dental organs. It consists in taking impressions, making plaster models from impressions, making dies, swedging plates, grinding and adjusting teeth, soldering and finishing, vulcanizing and finishing plates, pouring and finishing cast metal plates, and constructing various styles of crowns, bridges, and regulating devices, with such instruction as will familiarize the student with the most approved methods of doing such work.

EXAMINATIONS

At the end of each semester examinations are held on all subjects taught during the semester, and the results are recorded in terms of the following grades: A, excellent; B, good; C, fair or satisfactory; D, deficient; E, not passed. Students receiving a grade of D in any course must remove the conditions during the semester following the one in which it was received. No student who, at the end of a year, has failed to pass in two of the required subjects of his course is admitted to an advanced class during the first semester of the following year.

REQUIREMENTS FOR GRADUATION

The degree of Doctor of Dental Surgery is conferred upon those students in the College of Dental Surgery who have complied with the requirements for admission, possess a good moral character, have devoted four years to the study of dentistry, and have passed with satisfactory grades all the courses contained in the curriculum given on page 463.

Unless admitted to advanced standing, the candidate for this degree must have attended four full years in this College, and he is advised to attend them consecutively.

ADVANCED COURSES

The purpose of the advanced courses is to meet the requests of students for further opportunity to pursue the scientific branches of the regular college curriculum, and also to meet an often expressed wish on the part of practitioners to pursue some special scientific investigation, which has been entered upon at home, with limited resources in the way of books of reference, laboratory facilities, and apparatus, and without the aid of instructors or advisers in associated sciences.

The advanced courses are open only to graduates of this college who have made marked records in their undergraduate work, and to graduates of this and other colleges who have had at least two years of continuous practice since graduation, and who have published original articles of scientific value, which show a capacity on their part for continuing such work with credit.

The program of study is independent of, and additional to, the regular undergraduate work, and embraces only such topics as will aid in training men to carry on scientific research in subjects, associated with practical dentistry, or with dentistry in its scientific aspect.

The time required to complete the course prescribed for the advanced degree depends upon the diligence and capacity of the student, but at least a year's work is required in all cases.

Advanced students are required to pay the same annual fee as undergraduates, and those who have not previously been matriculated in this University are also required to pay the usual matriculation fee. The expenses of the laboratory courses vary according to the character of the work taken.

The degree of Doctor of Dental Science (D.D.Sc.) is conferred only upon advanced students who complete the prescribed course as outlined above, or a course embracing an equivalent amount of scientific work.

FACILITIES FOR INSTRUCTION

For general information relating to the University libraries, museums, laboratories, hospitals, and gymnasiums, see pages 51 to 75 and 402 to 406.

Among the facilities of special interest to students of dentistry the following may be mentioned:

FORD-MITCHELL MUSEUM

The dental museum is supplied with a large number of anatomical, physiological, pathological, and histological preparations, including a series illustrating dentition from infancy to the completion of the process of the adult, and the normal changes through life to old age, and also illustrative of the dental and osseous tissues. Preparations, natural and artificial, greatly facilitate the study of the nervous and vascular systems. The design is to make available every practicable appliance in this direction.

The odontological collection is probably the largest and best of its kind to be found in any dental college in the world. It comprises the entire set of crania and odontological specimens presented by the late Professor Ford, and has been recently more than doubled in size and value by the gift of the private collection of Dr. William Mitchell, of London, England, who has spent many years and large sums of money in bringing together material from all quarters of the world. Additions to this collection are desired, and gifts of material illustrating comparative odontology and typical or abnormal human teeth, will be gratefully received.

TAFT LIBRARY

A library of dental science (named in honor of the late Professor Jonathan Taft), containing almost every known work on this specialty, including an almost complete file of every dental journal published, is shelved in the Dental building, where it is accessible to all students. A finely appointed reading room is connected with the library. Nineteen dental journals are regularly received.

TECHNIC LABORATORIES

The new Dental College building contains two large technical laboratories accommodating one hundred twenty-five students each. They are fitted out with all new and modern appliances, such as:—Furnaces, soldering tables, rolling mills, and electric lathes; appliance, for the various manipulations of prosthetic dentistry, such as the construction of artificial dentures on gold, silver, aluminum, rubber, and other bases; appliances for the regulation of teeth and for the mechanical treatment of oral deformities and facilities for the manufacture of instruments. Attention is given to the manipulation and management of the precious metals with reference to their use for dental purposes.

Each student is furnished a work bench for the instruments that he has to furnish for the prosecution of his work. If a student has any of these instruments it would be well to bring them; but it is more desirable to defer purchasing until the advice of the instructor in the college has been secured, as it is desirable that a complete and uniform outfit should be in the possession of each student. This outfit costs about fifty dollars, and if taken care of will be a permanent investment, as the tools will all be necessary and useful in practice. These tools must be purchased at the beginning of the course, as they are required during the first as well as during the succeeding years.

DENTAL OPERATING ROOMS

The operating rooms are large, well lighted, heated, and ventilated. The main room contains eighty-five modern operating chairs, with brackets, fountain cuspidors, and cases for instruments. Other rooms contain chairs and apparatus for the administration of anæsthetics, for the extraction of teeth, and for other purposes. Each student is required to supply himself with a dental engine and a full set of operating instruments; these must be purchased with the advice of the instructor, and will cost about one hundred dollars. Like the laboratory tools, they will be necessary to begin practice, and if carefully used will last many years; consequently care should be exercised in their purchase. They need not be purchased until the last half of the second year.

The dental curriculum is now given in a new building erected especially for this work, which is one of the best planned and equipped buildings for the purpose in the world.

COURSES IN OTHER COLLEGES AND SCHOOLS

Those who can command the time may also avail themselves of numerous lectures, or pursue elective studies, in the College of Literature, Science, and the Arts, (page 150); or may attend special lectures in the Medical School (page 394), such as those on gynecology and the diseases of children, or on other subjects that are important to the practicing dentist.

TEXT-BOOKS

A list of the text-books used and recommended is given in the special Announcement of the College, copies of which will be sent on request.

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

For the rules governing participation in public activities see pages 86 and 87.

FEES AND EXPENSES

The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. For the rules governing Second Semester fees and the refunding of fees see page 101.

Matriculation Fee.—For Michigan students, *ten dollars;* for all others, *twenty-five dollars.*

Annual Fee.—For Michigan students, *one hundred seven dollars;* for all others, *one hundred twenty-seven dollars.*

Graduation Fee.—For all alike, *ten dollars.*

Laboratory Expenses. — *Chemical Laboratories.* — Students are required to pay for the material and apparatus consumed by them. The average expenses for the required courses is about *ten dollars* each. *Histological Laboratory.*—A charge of *seven dollars* is made for material used in this Laboratory. *Bacteriological Laboratory.*—A charge of *fifteen dollars* is made for the expense of the course in this laboratory. *Anatomical Laboratory.*—A charge of *seven dollars* is made for material used in dissecting.

Incidental Expenses. — The expenses, for incidentals, teeth, rubber, and other material needed in the technical courses, but not supplied by the University, are about *fifteen dollars* for each year.

The average total expenses of a student of dentistry, including University fees, board, books, etc., for the college year of nine months are four hundred dollars, and upwards, depending on individual habits and tastes.

To avoid embarrassment, new students should come prepared to spend during the first week about $150, if residents of Michigan, or $175, if not residents of Michigan, for University fees, books, and tools.

Added information in regard to expenses may be found on page 99.

Graduate School[*]

A special announcement giving additional information in regard to the Graduate School is issued annually in March. For copies of this Announcement, and for information concerning admission and courses of study which is not given in the Announcement, address Professor Alfred H. Lloyd, Dean of the Graduate School.

The first graduate student at the University is recorded in the catalogue of 1856. The degrees of Master of Arts and Master of Science were earliest conferred, the degree of Doctor of Philosophy being offered for the first time in 1875. Changes made in studies in 1877-1878 had an important bearing on graduate work at the University. This was due to the multiplication of electives and the introduction of the credit system. The seminary method of instruction began then to assume considerable proportions and the movement was strengthened by a growing demand for better trained teachers.

In the spring of 1892 a Graduate School was organized in connection with the College of Literature, Science, and the Arts. Thus provision was made for a more systematic and efficient administration of higher work, and, so far as possible, for the separate instruction of graduate students.

In the fall of 1912 the Graduate School was reorganized so as to include graduate work in all Schools and Colleges of the University. The management of the Graduate School is vested in an Executive Board of seven, together with the President and the Dean of the School.

ADMISSION AND REGISTRATION

ADMISSION

The privileges of the Graduate School are open to graduates of any school or college of this University requiring a four-year course for graduation, and to graduates of other universities and colleges of recognized standing who are qualified to pursue with profit the advanced courses of study offered in the University. *But admission*

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[*] **Formerly known as the Graduate Department.**

to study in the School does not imply necessarily admission to candidacy for a degree.

Graduates of other institutions whose course of study is not substantially equivalent to that prescribed at this University are required to do an additional amount of undergraduate work before being admitted to formal candidacy for an advanced degree.

For information in regard to enrollment for graduate study in the Summer Sesison, see page 485.

REGISTRATION

Every applicant for admission to the Graduate School must present himself with his credentials to the Dean, and submit a certificate of graduation from the institution from which he comes. This certificate should specify the degree he has obtained, the courses he has completed leading to his bachelor's degree, the scholarship grades or marks attained or received in each course, and the basis of the grading or marking in force in said institution.

All students of the Graduate School, *whether registered in a previous year or not,* are required to register with the Dean at the beginning of *each year* of residence. *Such registration must be made at the beginning of the year to insure recognition that the residence requirement has been met.*

Blanks showing the course of study the student is pursuing must be filed at the beginning of *each semester or Summer Session at the office of the Graduate School.*

Students may register in the Graduate School at any time up to and including the first Saturday of the semester. *After this day students may register only with permission of the Dean, and upon payment of an additional fee of $5.00.* This fee may, in special cases of enforced absence or illness, be remitted upon application to the Dean of the School.

Undergraduates of this University, who at the beginning of a given semester are within three hours, or at the beginning of a Summer Session within two hours, of graduation, may be permitted to register in the Graduate School and have that semester or Summer Session counted toward the residence requirement for a higher degree. Such students must pay the fees required in the undergraduate College or School in which they are primarily registered.

Students who finish the undergraduate course of this University at the end of the first semester and who continue their residence for the remainder of the year, are permitted to register in the School and thus secure the privileges of its membership, even though the bachelor's degree is not conferred until the close of the year.

Applicants who do not wish to become candidates for a degree, may be admitted and registered as special graduate students. Such graduate students must designate, and have approved by the Dean, the general lines of study which they wish to pursue.

Students who withdraw from the University during the academic year are requested to inform the office without delay of such withdrawal.

Changes of subjects originally selected must be reported to the Dean for approval.

UNIVERSITY FELLOWSHIPS

Ten University Fellowships with an annual value of $300 and five with a value of $500 each have been established by the Board of Regents. Applications for appointment to these fellowships, which are open to graduates of any college or university of recognized standing, must be made to the Dean of the Graduate School upon special blanks obtainable from him upon request.

Each fellow shall pursue his studies under the direction of the professors in charge of the departments in which he elects his subjects. (See pages 474 to 480.)

Fellows are appointed for a term of one year, but may be eligible for reappointment.

Holders of fellowships are required to pay the matriculation fee (if not already paid), the annual fees, the diploma fee, laboratory expenses, and similar charges, the same as other students of the school or college in which their work lies.

Applications for appointment to these fellowships should be made to the Dean of the Graduate School before March 1 of the year preceding the appointment.

STATE COLLEGE FELLOWSHIPS

By the action of the Board of Regents of the University of Michigan, the faculties of ten colleges in the State of Michigan, are authorized to nominate each year to the administrative officers of the Graduate School, some member of their respective senior classes, or one of their graduates of not more than four years' standing as a suitable candidate for a State College Fellowship, with a stipend of $300, for the next academic session. Such candidates, when duly appointed by the Board of Regents, shall be placed on the same footing, and be subject to the same regulations as the University Fellows. (See above.) All nominations, accompanied in each case by a brief statement of the nominee's fitness for appointment, and an indication of the lines of graduate work he expects to pursue, should be on file in the office of the Graduate School not later than May 15. Each college should also nominate an alternate to the regular candidate.

OTHER FELLOWSHIPS

For other fellowships open to students enrolled in the Graduate School, see page 88.

CHARACTER OF GRADUATE WORK

The essential feature of graduate work is specialization of study. Every graduate student is expected to acquire an intimate knowledge of his field of study and of the methods employed in this field so that he will be able to approach his subject in an independent and critical spirit. After a student has selected the department of study in which he wishes to specialize, his work will be under the immediate supervision of the professor in charge of the subject of specialization or, in case of study for the highest degrees, of a special committee appointed by the Dean. This professor or this committee will arrange a course of study suited to the student's desires, needs, and previous attainments, will assist him in the choice of a subject for a dissertation, if such be required, pass judgment upon his dissertation when it is written, conduct his examination, and, if the examination is creditably sustained, report him to the Executive Board as worthy of the degree sought. The nature of the work prescribed, and of the supervision, varies according to the subject chosen, the degree sought, and the previous attainments of the student. The work may consist of attendance upon certain specified courses of study, of reading to be done privately and reported upon, or of original research to be carried on more or less independently.

A student may elect work in more than one School or College provided the courses chosen form a coherent group. Advanced undergraduate courses will be accepted in partial fulfillment of the requirements for a degree under conditions prescribed by the Executive Board. It is expected that all work done by a graduate student will be of superior grade.

Although the work of the Graduate School is in large part planned with reference to the needs of those who desire to specialize in definite subjects, the opportunities of the School are open to other students as well.

DEGREES CONFERRED

The degrees conferred on the completion of approved courses of study in the Graduate School are Master of Arts, Master of Science, Master of Science in Forestry, Master in Landscape Design, Master of Science in Engineering, Master of Science in Public Health, Mechanical Engineer, Civil Engineer, Electrical Engineer, Chemical Engineer, Marine Engineer, Naval Architect, Doctor of Philosophy, Doctor of Science, and Doctor of Public Health.

THE MASTERS' DEGREES—A.M., M.S.

A student who has been admitted to study for the master's degree may be recommended for the degree after one year of resident study at this University provided that the year has been spent in taking full work in studies of graduate grade, and that a satisfactory record has been made.

The degree of Master of Arts is the one usually conferred, though candidates who pursue scientific studies may at their option receive the degree of Master of Science.

The work done in residence is mainly in courses of study regularly announced, but private work is often undertaken under special direction.

A student who has received the bachelor's degree from a college not of sufficiently high standing, or who has not previously taken such courses as are required in preparation for graduate work, must expect to spend more than one year in residence, the length of time to be determined in each case by the character of his previous work and the quality of his work in this School.

All graduate students taking regularly announced courses of study are expected to attend the examinations given in such courses.

MASTER OF SCIENCE IN FORESTRY—M.S.F.

The work of candidates for the degree of Master of Science in Forestry is under the immediate supervision of the professor of Forestry and consists mainly of prescribed courses. The department of Forestry publishes annually a special Bulletin which contains full information concerning the work leading to this advanced degree.

Candidates for the degree of Master of Science in Forestry may be conveniently divided into three classes:—

1. Graduates of this University who have received either the degree of Bachelor of Arts or Bachelor of Science and have completed the courses prescribed for the first four years by the department of Forestry. Such students are usually permitted to complete the requirements for the Master's degree in one year.

2. Graduates of this University and of other institutions of recognized standing, who have successfully pursued courses in general science approximately equivalent to those prescribed for the first four years, are required to spend two years in residence in order to obtain the Master's degree.

3. Graduates of this University and of other colleges and universities of approved standing, whose preparation is deficient in some of the important required courses, notably in botany and in other natural history subjects. are required to spend a longer period in

order to satisfy the requirements for the degree of Master of Science in Forestry. This period will depend upon the preparation and ability of the student.

Candidates for the degree of Master of Science in Forestry are subject to the same regulations as candidates for the degree of Master of Arts or of Master of Science. (See page 475.)

MASTER IN LANDSCAPE DESIGN—M.L.D.

Graduates of this University with the degree of Bachelor in Landscape Design will receive the degree of Master in Landscape Design upon the successful completion of the requirements for the same. The graduate work in Landscape Design consists largely of prescribed courses and may, in general, be completed in one year. A special bulletin giving full description of courses in Landscape Design may be had upon applicatcion to the Secretary of the University.

MASTER OF SCIENCE IN ENGINEERING—M.S.

All students wishing to study for an advanced degree in Engineering must have received the bachelor's degree from this University, or from some other university or technical school of recognized standing. According to the previous training in engineering studies, two classes of students may be distinguished.

A

A graduate from the Colleges of Engineering and Architecture of this University or from a technical school of recognized standing who wishes to continue his work in the same branch of engineering or architectural study in which he has received the corresponding bachelor's degree, will find it possible to complete the work required for the master's degree in one year, provided his work proves to be of superior grade.

B

A graduate whose training in engineering has not been equivalent to the courses offered by the Colleges of Engineering and Architecture of this University must expect to spend more than one year in the Graduate School before he will be allowed to receive his degree. The length of time varies with the previous attainments of the student and the character of his work. Unless previously completed, the equivalent of the following undergraduate curricula must be taken by the student before being admitted as a candidate for the degree of Master of Science in Engineering: the English, Foreign Language, Mathematics, physics. chemistry, Descriptive Geometry, and Engineering Mechanics required of all students except architects in the College of Engineering, and in addition at least fifteen hours of the fundamental technical requirements of the group in which he desires to specialize.

A student presenting the minimum requirement must spend at least two years on an approved course of study and complete it with more than average standing.

Should a student be required to take more than a year's work from the undergraduate courses above mentioned, he will not be allowed to enter the Graduate School, but must enroll in the College of Engineering.

Candidates for the degree of Master of Science in Engineering are subject to all the general regulations for the master's degree, (see page 475). In addition they are required to write a satisfactory thesis.

After the student has selected the department of study in which he wishes to specialize, his work will be under the immediate supervision of a committee appointed by the Dean, of which committee the head of the department concerned shall be the chairman. This committee will assist the student in the choice of a thesis, and will pass judgment on the thesis when it has been published, and conduct previous to recommendation for the degree, a final examination covering the courses pursued by the candidate, and the thesis.

MASTER OF SCIENCE IN ARCHITECTURE—M.S.

All students wishing to study for the degree of Master of Science in Architecture must hold the corresponding bachelor's degree from this University or some other institution of recognized standing. The graduate work must be of advanced character, a thesis in the design and construction of some building being required in the second semester of the graduate year.

All students in this course are subject to the general regulations of the Graduate School.

MASTER OF SCIENCE IN PUBLIC HEALTH—M.S.

Candidates for the degree of Master of Science in Public Health must possess the degrees of Bachelor of Arts or Bachelor of Science or Doctor of Medicine. The course of instruction covers one academic year, beginning with the opening of the University in the fall. and continuing until the following June. At the close of the course a diploma of Master of Science in Public Health will be given to all who successfully complete their courses and show fitness for work in public health. The moral character of applicants for the degree must be shown to be above question.

All candidates for the above degree are subject to the rules and regulations of the Graduate School.

THE ENGINEER'S DEGREE

Civil Engineer—C.E.; Mechanical Engineer—M.E.; Electrical Engineer—E.E.; Chemical Engineer—Ch.E.; Naval Architect — Nav. Arch.; Marine Engineer — Mar.E.; or Architect—Arch.

These advanced degrees will be conferred only upon persons who have proved their ability to plan and direct professional work or original investigation in applied science.

A candidate for any of these degrees must have received a bachelor's degree from an approved college, at least five years before registration for the advanced degree. He must have been engaged in professional work, in responsible charge of the same for at least one year, and must present at the time of registration a detailed account of his professional experience at that time, which must be approved by the Executive Board after consultation with the committee appointed by the Dean.

He must have pursued before receiving the degree an amount of advanced study equivalent to at least one year's work at the University. This work must have been performed under the direction of a special committee, or be approved by such a committee. Those who have received the degree of Master of Science in Engineering from this School may be excused from part of the advanced study required, in case the work done for the master's degree is, in the opinion of the committee, acceptable towards the higher degree.

He must also present a satisfactory thesis giving evidence of his professional attainments and his fitness to receive the degree sought.

A copy of the thesis must be in the hands of the Dean not later than May 1, if the candidate wishes to receive his degree at Commencement. Candidates for these degrees usually register in absentia (for fees see page 482).

THE DOCTOR'S DEGREES—Ph.D., Sc.D.

The Doctor's degree is conferred solely in recognition of marked ability and scholarship in some relatively broad field of knowledge such as the Ancient Languages, Philosophy, History, Political Science, Physics, Chemistry, etc. For this purpose the student will be required to work under the direction of a special committee. A portion of the work consists in pursuing regularly announced graduate courses of instruction in the chosen subject, and in such cognate subjects as may be selected by the student and approved by the committee. However, the principal method of developing a mastery of the subject consists in pursuing independent research work in some subdivision of the selected subject. and the scholarly presentation of the result of such investigation in the form of a dissertation.

No definite term of required residence can be specified. As a rule, three years of graduate study are necessary, the last two semesters of which must be spent at this University. This last requirement may be waived, however, in the case of Bachelors of this University who have spent one year in residence pursuing courses leading to an advanced degree. Credit may be allowed for graduate courses taken in other universities of recognized standing.

A student wishing to become an applicant for the doctor's degree must first present himself to the Dean, indicating on a blank furnished for that purpose the department in which he wishes to work. The supervision of the student's work will then be entrusted to a special committee.

Not every applicant for the doctor's degree will be accepted as a candidate. A student wishing to become a candidate for the doctor's degree must make a formal application to be so enrolled at least two semesters prior to the time for presenting himself for examination. At this time the subject of the dissertation must be chosen and approved by the committee concerned.

No student shall be registered as a candidate for the doctor's degree until he has done one year of satisfactory graduate work in the Graduate School of this, or some other university of recognized standing.

No student will be accepted as a candidate for the doctor's degree who has not a knowledge of French and German sufficient for purposes of research.

The degree of Doctor of Philosophy is the one usually conferred, though candidates who pursue studies along scientific lines may at their option receive the degree of Doctor of Science.

DOCTOR OF PUBLIC HEALTH—D.P.H.

Candidates for the degree of Doctor of Public Health must possess the degree of Bachelor of Arts or Bachelor of Science or Doctor of Medicine. Their first year's course is identical with that prescribed for the degree of Master of Science in Public Health. The second year's work must be spent in research work in one or more of these subjects, with the presentation of a dissertation containing original work of sufficient merit, which must be passed upon by and defended before all the members of the Faculty concerned in the giving of the courses. A portion of the prescribed work may be taken elsewhere, but the right to do this must be left with the special committee in charge of the candidate's work.

THE DOCTOR'S DISSERTATION

The dissertation must exhibit creditable literary workmanship, but its acceptance depends more upon its subject-matter than upon its rhetorical qualities. It must be an actual contribution to knowledge and must be founded upon the author's own investigations carried on under the direction of his committee. The treatment should be as concise as the nature of the subject permits. Every dissertation should contain a clear introductory statement of the problem investigated, and likewise a final résumé of results. It should be preceded by an analytical table of contents, with page references, and a full list of the authorities consulted. The larger divisions and the more important minor divisions should be indicated by suitable headings. It is expected that the preparation of an acceptable dissertation will require the greater part of an academic year.

The dissertation must be completed and a typewritten, bound copy placed in the hands of the Dean of the Graduate School as early as the first of May of the year in which the candidate expects to take the degree. This copy will remain on file in the office of the Graduate School. If the examination of the candidate is to take place on some other date than in the month of June the dissertation must be in the hands of the Dean at least one month before the candidate can present himself for examination.

Every candidate for the degree of Doctor of Philosophy, Doctor of Science, or Doctor of Public Health, in case of the acceptance of his dissertation, is required to have the dissertation printed in full or in part, as may be approved by the responsible committee. To guarantee the printing of the dissertation, he is required to deposit with the Treasurer of the University, between the date of the acceptance of the dissertation and the time fixed for his examination, the sum of fifty dollars. This deposit will be returned to him in case of failure to pass his examination, or whenever he shall cause his dissertation to be printed at his own expense, or shall have it published in a form and under auspices approved by the responsible committee. The candidate is required to deposit one hundred fifty copies of the printed dissertation in the University library, these copies to be used for exchange with other universities. Provision has been made, however, that in cases where this requirement would work hardship, it may be waived on recommendation of the candidate's committee.

In the printing of this dissertation at his own expense the candidate will be expected to use good, substantial paper, and sightly topography. A page four inches by six, with outside margins of at least one inch, is recommended. The dissertation must be bound with cover and title-page, and the latter, in addition to the title and name of the author, must bear the following inscription: A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy (or of Science, or of Public Health), in the University of Michigan.

EXAMINATIONS

All graduate students in attendance upon regular courses in which stated examinations are held, whether during the semester or at its end, are required to take these examinations with the classes concerned.

No final examinations for the master's degree will be required unless demanded by the department in which the student specializes.

The final examinations of candidates for the doctor's degrees are commonly held during the first part of June; but the examinations can usually be arranged at any time when a candidate has fulfilled all the technical requirements and has satisfied his committee and the Dean that his work has been such as to warrant an examination.

After the candidate has completed all work except the dissertation he may be given a preliminary examination, covering this work. In this case the final examination will be on the subject of the dissertation only.

Ordinarily the examinations are oral, and in each case they are held before those comprising the special committee in charge of the candidate's work and before such others as may be appointed by the Dean. The examination may be preceded by such written or oral tests as individual instructors consider necessary.

WORK IN ABSENTIA

As a rule work *in absentia* is not permitted, but a student who has practically completed the work required for a degree, may be allowed to continue his studies for the degree without further residence at the University, on such conditions as the Executive Board may determine in each case. *In the case of the master's degree this privilege is restricted to graduates of this University.* Candidates who find it necessary to complete a portion of their work *in absentia* are required to petition the Executive Board through the Dean for such privilege, and if the petition is granted, they must register *in absentia* and keep the Dean informed of their continued connection with the School and of the progress of their work.

Candidates for the engineer's degree who have completed the graduate work required for the degree usually complete the thesis as students *in absentia.*

RULES GOVERNING PARTICIPATION IN PUBLIC ACTIVITIES

For the rules governing participation in public activities see pages 86 and 87.

SUMMER SESSION

Graduate students who are regularly matriculated in the University, may carry on work during the Summer Session which will count toward an advanced degree. Graduates of other universities or colleges of similar standing, who are competent to enroll for a higher degree, may, upon the payment of a fee of twenty-six dollars, matriculate in the University and begin graduate study during the

Summer Session. This fee of twenty-six dollars includes the regular matriculation fee and the fee for the current Summer Session.

Candidates for the master's degree, if graduates of the University of Michigan, may present themselves for examination after attendance upon three Summer Sessions of this University, supplemented by satisfactory work done *in absentia* under the direction of the proper committee.

Graduates of other institutions who have been admitted to candidacy for the master's degree, may be recommended for the degree after attendance upon two Summer Sessions and one semester's residence in the University, or after attendance upon four Summer Sessions.

Full information concerning graduate courses in the Summer Session may be found in the Announcements of the Graduate School and of the Summer Session. These Announcements may be obtained from the Dean of the Graduate School.

FEES AND EXPENSES

The Matriculation Fee and the Annual Fee must be paid in advance. For the rules governing Second Semester fees and the refunding of fees see page 101.

Matriculation Fee.—For Michigan students, *ten dollars;* for all others, *twenty-five dollars.*

Annual Fee.—For Michigan students, *forty-two dollars;* for all others, *sixty-two dollars.* The annual fee required for all graduates who are granted the privilege of pursuing studies for a master's degree *in absentia* is *ten dollars.*

Penalty for Late Registration.—After the first Saturday of the semester students may register only with permission of the Dean, and upon payment of an additional fee of *five dollars.*

Summer Session Fee.—For matriculates, *twenty-one dollars;* for non-matriculates, *twenty-six dollars.* See Summer Session above.

Part Time Fee.—Persons engaged in teaching in public, parochial or private schools, as well as practicing engineers and physicians, who are regularly admitted as students in the Graduate School, may elect not more than five hours a week, upon the payment of a fee of *ten dollars* in lieu of the regular annual fees. Such students must pay the matriculation fee the same as other students.

This privilege of enrolling at an annual fee of ten dollars is extended to students in the Graduate School who have completed their course work for the doctor's degree, but have not completed the dissertation requirement.

Graduation Fee.—For all alike, *ten dollars.* A fee of *two dollars* is charged for the Teacher's Diploma.

For laboratory fees and other expenses see page 99.

Summer Session

A special Announcement of the Summer Session, containing further particulars than here are given in regard to the courses of instruction, etc., is published annually. Copies of this Announcement can be had by addressing Mr. Shirley W. Smith, Secretary of the University.

In the Summer Session of the University, courses of instruction are offered in the College of Literature, Science, and the Arts, the Colleges of Engineering and Architecture, the Medical School, the Law School, and the College of Pharmacy. The University also conducts courses in Library Methods, and maintains an Engineering Camp and a Biological Station at Douglas Lake in Cheboygan County, Michigan.

While these courses are, for the most part, equivalent in every respect to the courses given during the Academic Session, special advantages are offered to advanced and graduate students.

The Administration of the Summer Session of 1917 is in charge of **Edward H. Kraus**, Dean, and **Thomas E. Rankin**, Secretary, and the following: **Arthur G. Hall**, Registrar, College of Literature, Science, and the Arts; **Louis A. Hopkins**, Colleges of Engineering and Architecture; **Charles W. Edmunds**, Medical School; **Edwin C. Goddard**, Law School; **Julius O. Schlotterbeck**, Dean of the College of Pharmacy; **Alfred H. Lloyd**, Dean of the Graduate School; **Clarence T. Johnston**, Director of Camp Davis; and **George R. LaRue**, Director of the Biological Station.

In the summer of 1917 the session will open on Monday, July 22, and continue for eight weeks, except in the Medical and Law Schools. The session in the Medical School is six weeks in length. In the Law School the session will open on Monday, June 25, and will continue for ten weeks.

REQUIREMENTS FOR ADMISSION

There are no formal requirements for admission to the Summer Session and its courses are open to all persons qualified to pursue them to advantage. Students who have been dismissed from the University will not be allowed to enter the Summer Session without the consent of the Dean of the School or College of which they were members.

REGISTRATION

In order to facilitate arrangements for the accommodation of prospective students, it is urged that all persons contemplating work in the Summer Session should notify the Secretary on or before June 25. The offices of the University Treasurer and of the several Secretaries will be open for the registration of students on Friday and Saturday, June 29 and 30. So far as possible, it is expected that all students will arrange to reach Ann Arbor by June 30, in order to secure rooms and to register.

Students desiring to pursue courses in law are requested to register on June 22 and 23, as the work in that School begins on June 25.

To register the student must enroll with the Secretary of the School or College in which he wishes to pursue studies, and pay his fees to the Treasurer. No student will be admitted to classes in any School or College except upon presentation of the Treasurer's receipt.

CREDIT FOR COURSES

Regular students of the University will receive credit toward graduation for work done in courses of University grade, upon passing satisfactory examinations at the close of the season. A record is kept of all University credits earned by students and these credits may be applied toward a degree in case the student becomes, subsequently, a candidate for a degree. The number of hours credit allowed for courses offered in the various Schools and Colleges is indicated in connection with the description of the courses, and where no such mention is made, no credit is given. Since the work of the Summer Session is equivalent to similar work of the academic year, it is now possible for a student to secure the degree of Bachelor of Arts or Bachelor of Science by attendance upon three academic and three Summer Sessions. Similar reductions in time are also possible in all other colleges or schools save the Medical School.

In the College of Literature, Science, and the Arts, and the Colleges of Engineering and Architecture, the maximum amount of credit given for work done in any one Summer Session is eight hours.

Requests for further information concerning credits should be addressed to the Secretary of the School or College in which credit is desired.

CREDIT CERTIFICATES

Students of the Summer Session who are not matriculated in the University will, upon request, receive certificates of attendance and of work satisfactorily performed. Application for these certificates must be made at least two weeks before the close of the

Session, and the applicant must leave with the Secretary of the School or College in which he is enrolled, an envelope, stamped and directed to his home address. The certificate will then be forwarded by mail.

GRADUATE WORK

All graduate courses are open to students who are properly qualified to pursue them. Graduate students who are regularly matriculated in the University and properly registered with the Dean of the Graduate School, may carry on work during the Summer Session which will count toward an advanced degree. (See Matriculation below.)

Candidates for the master's degree, if graduates of the University of Michigan, may present themselves for examination after attendance upon three Summer Sessions of the University, supplemented by satisfactory work done *in absentia* under the direction of the proper committee. Graduates of other institutions may present themselves for examination for such degree either after attendance upon four Summer Sessions or after two Summer Sessions and one semester's residence in the University.

Candidates for the doctor's degree will find that the Summer Session offers unusual opportunities for research work. Detailed information concerning the requirements for the doctor's degree may be obtained from the Dean of the Graduate School.

MATRICULATION

Formal admission to the University and payment of a matriculation fee are not required for students of the Summer Session. Those who so desire, however, may be admitted and matriculated upon presentation to the Dean of the School or College they desire to enter, of proper credentials fully covering the requirements for admission.

Persons desiring to matriculate at this time should mail their credentials to the Dean of the School or College concerned, at least one month before the opening of the Summer Session.

The matriculation fee, which is ten dollars for a citizen of Michigan, and twenty-five dollars for a person who comes from any other State or country, is paid but once, and entitles the student to the privileges of permanent membership in the University.

Graduates of any reputable college or university, who in the judgment of the Dean of the Graduate School are competent to enroll for a higher degree, may, upon the payment of a fee of twenty-six dollars, matriculate in the University and enter upon graduate study during the Summer Session. This fee of twenty-six dollars includes the regular matriculation fee and the fee for the current Summer Session.

FEES

The fee for the Summer Session in the College of Literature, Science, and the Arts, the Colleges of Engineering and Architecture, the College of Pharmacy, and in the Graduate School, is $21.00, regardless of the number of courses taken. This fee will be required of those who wish to attend as visitors, as well as those who wish to do regular work and attend the examinations.

In the Medical School the fee is $16.00 for laboratory and demonstration courses, and $26.00 for the more strictly clinical courses, regardless of the number taken.

In the Law School the fee is $26.00.

The fee for the courses in Embalming and Sanitary Science is $61.00.

Each student will be required to register in the School or College in which the major part of his work is done, and if he desires to elect work in another School or College in which the fee is higher, he will be required to pay an additional fee of $5.00 for each course so elected. It is to be understood that in all cases where laboratory or demonstration fees are required, such fees are to be paid in addition to the regular Summer Session fee.

For additional information concerning fees and expenses, see page 99, and also under Matriculation, page 485.

COURSES OF INSTRUCTION

The following courses were given during the Summer Session of 1916:

COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS

GREEK

1*s*. Homer's Iliad; Selections. *Two hours.* Professor WINTER.

14. Greek Religion and Mythology. *Two hours.* Professor BONNER.

16*s*. Greek Literature in English. *Two hours.* Professor WINTER.

FOR GRADUATES

21. Pindar. Professor BONNER.

7*e*. Aeschylus. *Two hours.* Professor BONNER.

7*a*. Herodotus. Professor BONNER.

SEMITICS AND STUDIES IN ENGLISH BIBLE AND THE HISTORY OF RELIGION

1. Israelitish History and Prophecy. *Two hours.* Professor WATERMAN.

2. The Ethnic Faiths. *Two hours.* Professor WATERMAN.

LATIN

Y*s*. Beginning Latin. Assistant Professor CRITTENDEN.

Z*s*. Caesar's Gallic War.—Professor WINTER.

4*s*. Virgil. *Two hours.* Assistant Professor CRITTENDEN.

6*s*. Rapid Reading of Easy Latin. *Two hours.* Assistant Professor CRITTENDEN.

7*s*. Latin Writing. *Two hours.* Assistant Professor CRITTENDEN.

20. Methods of Teaching High School Latin. *Two hours.* Assistant Professor CRITTENDEN.

21*c*. Teachers' Course in Cicero. *Two hours.* Assistant Professor CRITTENDEN.

5*s*. Roman Literature in English. *Two hours.* Professor WINTER.

FOR GRADUATES AND UNDERGRADUATES

9*s*. Roman Inscriptions and Roman Coins, interpreted in their bearing upon Roman Literature and Roman History. *Two hours.* Professor KELSEY.

FOR GRADUATES

18*c*. Latin Language. *Two hours.* Professor MEADER.

16*c*. The Fasti of Ovid. *Two hours.* Professor KELSEY.

GENERAL LINGUISTICS AND COMPARATIVE PHILOLOGY

5*hs*. Principles of Linguistic Science and Comparative Philology. *Two hours.* Professor MEADER.

FRENCH

1*as*. Beginners' Course. *Six hours.*

1. Beginners' Course. *Four hours.*

2. French of the Second Semester. *Four hours.* Mr. WANN.

3. Second Year French. *Four hours.* Mr. BURSLEY and Mr. WANN.

7. Advanced Composition. *Two hours.* Professor THIEME

13*s*. Conversation. *Two hours.* Professor LEVI.

52. French Drama. *Two hours.* Professor LEVI.

FOR GRADUATES

56. French Criticism in the Nineteenth Century. *Two hours.* Professor THIEME.

57. Introduction to the Literature of the Renaissance. *Two hours.* Professor THIEME.

ITALIAN

1*s*. Beginners' Course. *Four hours.* Assistant Professor McLAUGHLIN.

SPANISH

1. Beginners' Course. *Four hours.* Mr. DEL TORO.

2. Elementary Course. *Four hours.* Assistant Professor KENYON.

3. Second Year. *Four hours.* Mr. BONILLA.

7. Advanced Practical Spanish. *Two hours.* Mr. BONILLA.

17. Teachers' Course. *Two hours.* Professor WAGNER.

FOR GRADUATES

5. Don Quixote. *Two hours.* Professor WAGNER.

9. The Drama of the Seventeenth Century. *Two hours.* Professor WAGNER.

11. The Novel Before Cervantes. *Two hours.* Professor WAGNER.

15. Old Spanish Grammar and Readings. *Two hours.* Professor WAGNER.

GERMAN

1*as*. Beginners' Course. *Six hours.* Assistant Professor HAUHART.

1. Beginners' Course. *Four hours.* Dr. SCHWABE.

2*a*. Reading of easy German stories, with practice in speaking and writing German. *Two hours.* Assistant Professor FLORER.

3*a*. Modern Prose. *Two hours.* Assistant Professor SCHOLL.

3*ea*. Scientific German. *Two hours.* Assistant Professor SCHOLL.

5. Goethe's Iphigenie and Tasso, or Lessing's Nathan der Weise, *Two hours.* Assistant Professor EGGERT.

9. German Composition. *Two hours.* Assistant Professor EGGERT.

9*a*. Advanced Course in German Composition, or German Essay-Writing. *Two hours.* Professor DIEKHOFF.

9*c*. Advanced German Conversation. *Two hours.* Assistant Professor FLORER.

11. Studies in Schiller's Wilhelm Tell. *Two hours.* Professor HILDNER.

FOR UNDERGRADUATES AND GRADUATES

13. Advanced German Grammar. *Two hours.* Professor DIEKHOFF.

15. Goethe's Faust. *Two hours.* Professor WINKLER.

18*a*. Studies in Modern German Literature. *Two hours.* Professor HILDNER.

19. German Romanticism. *Two hours.* Professor WINKLER.

21. Heinrich Heine. *Two hours.* Professor BOUCKE.

27. Introduction to Middle High German. *Two hours.* Professor DIEKHOFF.

39. Proseminary in Goethe. *Two hours.* Professor BOUCKE.

39*a*. Proseminary in Schiller, Herder, or the Storm and Stress Movement. *Two hours.* Professor WINKLER.

GOTHIC

1. Lectures on Phonology and Morphology and Reading of the Gospels. *Two hours.* Assistant Professor EGGERT.

SCANDINAVIAN

2. Henrik Ibsen. *Two hours.* Professor BOUCKE.

ENGLISH

1*a*. Outline History of English Literature. *Two hours.* Assistant Professor HUMPHREYS.

31. American Literature. *Two hours.* Assistant Professor GINGERICH.

4. Shakespeare. *Two hours.* Professor TILLEY.

24. The English Bible, its literary aspects and influences. *Two hours.* Assistant Professor HUMPHREYS.

5. Chaucer. *Two hours.* Professor DEMMON.

5*c*. History of English Drama. *Two hours.* Professor TILLEY.

3*a*. Anglo-Saxon. *Two hours.* Professor TILLEY.

3*b*. History of the English Language. *Two hours.* Professor MOORE.

29*a*. Wordsworth and his Contemporaries. *Two hours.* Assistant Professor GINGERICH.
30. Eighteenth Century Romanticism. *Two hours.* Assistant Professor HUMPHREYS.
19*a*. Poetics. *Two hours.* Professor DEMMON.
13*a*. Introduction of the Poetry of Browning. *Two hours.* Professor STRAUSS.
18*b*. The Development of the English Novel. *Two hours.* Professor STRAUSS.

RHETORIC

General Courses in Rhetoric.
1*a*. Practical Composition. *Two hours.* Dr. MALLORY.
2*a*. Practical Composition. *Two hours.* Assistant Professor BRUMM.
3*a*. Narrative Writing. *Two hours.* Dr. MALLORY.
4*a*. Exposition and Criticism. *Two hours.* Dr. MALLORY.
11. The Teaching of Business English in High Schools. *Two hours.* Professor MORIARTY.
16*a*. Modern English Prose. *Two hours.* Assistant Professor BRUMM.
17. Diction and Usage. *Two hours.* Mr. COWDEN.
Courses in Journalism.
31*a*. Elementary Newspaper Writing. *Two hours.* Assistant Professor WHITE.
32*a*. Advanced Newspaper Writing. *Two hours.* Assistant Professor WHITE.
Graduate Work.
15*a*. The Theory and Practice of Argumentation. *Two hours.* Assistant Professor BRUMM.
20. Short-Story Writing. *Two hours.* Professor RANKIN.
28. Studies in the Dramatic Form of Writing. *Two hours.* Professor RANKIN.
30. Studies in Theories of Style. *Two hours.* Professor RANKIN.

ORATORY

1*a*. Elocution. *Two hours.* Mr. EICH.
2. Public Speaking. *Two hours.* Mr. EICH.
4*b*. Shakespearean Reading. *Two hours.* Professor TRUEBLOOD.
5*a*. Debating. *Two hours.* Professor TRUEBLOOD.
11. Oral Interpretation of Tennyson. *Two hours.* Assistant Professor HOLLISTER.
13. Oral English. *Two hours.* Assistant Professor HOLLISTER.

FINE ARTS

1*a*. General Introductory Course in Fine Arts. *Two hours.* Professor CROSS.

17*a*. The Technique and Criticism of Painting. *Two hours.* Professor CROSS.

HISTORY

7*a*. History of Rome to the Reorganization by Diocletian. *Two hours.* Professor WATERMANN.

8*a*. The Hellenistic World from Alexander to Augustus. *Two hours.* Professor WATERMANN.

50*a*. The Teaching of History. *Two hours.* Professor DOW.

12*a*. The History of Europe since 1870. *Two hours.* Professor TURNER.

47*a*. Seminary in Recent English and European History. *Two hours.* Professor TURNER.

14*a*. The Political and Constitutional History of the United States, 1760-1815. *Two hours.* Assistant Professor ROBINSON.

60. The History of the United States, 1877-1916. *Two hours.* Assistant Professor ROBINSON.

61. The Opening of the Far West, 1519-1848. *Two hours.* Professor BOLTON.

62. Seminary in the Relations of the United States with Mexico. *Two hours.* Professor BOLTON.

52. Present Day Latin-America. *Two hours.* Dr. SCHURZ.

51. Latin-American History. *Two hours.* Dr. SCHURZ.

POLITICAL ECONOMY

1*s*. Elements of Political Economy, I. Principles. *Two hours.* Mr. ARMSTRONG.

1*as*. General Economics. *Two hours.* Mr. ARMSTRONG.

2*s*. Elements of Political Economy, II. Current Problems. *Two hours.* Mr. ARMSTRONG.

3*s*. Labor Problems. *Two hours.* Assistant Professor DOWRIE.

6*s*. The American Transportation Problem. *Two hours.* Professor SHAKFMAN.

7*s*. Economic Theory, with special reference to the Theory of Value and Distribution. *Two hours.* Professor FRIDAY.

9*s*. Money and Credit. *Two hours.* Assistant Professor DOWRIE.

10*s*. Banking Theory and Practice. *Two hours.* Assistant Professor Dowrie.

15*s*. The Corporation and Trust Problems *Two hours.* Professor Sharfman.

38*sa*. Accounting Principles. *Two hours.* Mr. Paton.

38*sb*. Accounting Practice. *Two hours.* Mr. Paton.

40*s*. Advanced Accounting Theory and Practice. *Two hours.* Professor Friday.

SOCIOLOGY

19*s*. Principles of Sociology; Social Organization. *Two hours.* Dr. Thompson.

20*s*. Problems in Sociology. *Two hours.* Dr. Thompson.

21*s*. Social Evolution. *Two hours.* Dr. Thompson.

POLITICAL SCIENCE

1*a*. American Government. *Two hours.* Dr. Hayden.

5*a*. Public International Law. *Two hours.* Professor Reeves.

6*a*. History of American Diplomacy. *Two hours.* Professor Reeves.

7*a*. British Government and Administration. *Two hours.* Dr. Hayden.

PHILOSOPHY AND PSYCHOLOGY

INTRODUCTORY COURSES

1*s*. Introduction to Philosophy. *Two hours.* Assistant Professor Vibbert.

7*s*. Elementary Psychology. *Two hours.* Dr. Adams.

9. Introduction to Logic. *Two hours.* Assistant Profesor Sellars.

FOR UNDERGRADUATES AND GRADUATES

5*s*. Introduction to Ethics. *Two hours.* Assistant Professor Sellars.

11*s*. Present-Day Tendencies in Philosophy. *Two hours.* Assistant Professor Vibbert.

16*s*. Aesthetics. *Two hours.* Assistant Professor Parker.

15*cs*. Philosophy of Religion. *Two hours.* Professor Wenley.

5*es*. Teachers' Course in Ethics. *Two hours.* Professor Wenley.

8*s*. Experimental Psychology. *Two hours.* Dr. ADAMS and Miss PERKINS.

24*cs*. Psychology of Advertising. *Two hours.* Dr. ADAMS

FOR GRADUATES

31*k*. Seminary in Psychology. Professor PILLSBURY.

EDUCATION

HISTORICAL COURSES

1. History of Ancient and Medieval Education. *Two hours.* Assistant Professor JACKSON.

2. History of Education. Modern Period. *Two hours.* Assistant Professor JACKSON.

THEORETICAL COURSES

5. Psychology of Education. *Two hours.* Assistant Professor BREED.

34. Seminary in Educational Psychology. *Two hours.* Assistant Professor BREED.

45*a*. Experimental Education. *Two or more hours, to be arranged.* Assistant Professor BREED.

ADMINISTRATIVE COURSES

14. Social Education. *Two hours.* Professor WHITNEY.

16*a*. School Administration. *Two hours.* Professor WHITNEY.

18. High School Program of Studies (Curriculum). *Two hours.* Professor DAVIS.

32. Secondary Education. Advanced Course. *Two hours.* Professor DAVIS.

MATHEMATICS

80. Plane Geometry. Mr. COE.

81. Solid Geometry. Mr. ROUSE.

82. Elementary Algebra. Mr. BALDWIN.

83. Trigonometry. *Two hours.* Professor KARPINSKI.

84. Algebra. *Two hours.* Mr. MILLER.

2. Analytic Geometry. *Four hours.* Mr. WELLS.

86. Geometry and Algebra. *Two hours.* Professor BEMAN.

3. Calculus. *Four hours.* Professor MARKLEY and Mr. COE.

89. Calculus. *Four or five hours.* Mr. POOR.

51. Introduction to the Mathematical Theory of Finance, Insurance, and Statistics. *Two hours.* Mr. BALDWIN.

48. History of Mathematics. *Two hours.* Professor KARPINSKI.

FOR GRADUATES

90. Differential Equations. *Two hours.* Professor BEMAN.
92*a*. Theory of Functions of a Complex Variable. *Two hours.* Professor FIELD.
93*a*. Algebra. Professor FIELD.
94. Geometry. Professor FIELD.
97. Advanced Calculus. *Two hours.* Professor FORD.
98. The Theory of Potential. *Two hours.* Professor FORD.
95. Infinite Series and Products. *Two hours.* Professor FORD.
96. The Elements of Mechanics with Application to Physical and Astronomical Problems. *Two hours.* Mr. COE.

ASTRONOMY

1*s*. Modern Astronomy. *Two hours.* Professor CURTISS.
3. Practical Astronomy. *Two hours.* Professor HUSSEY.
21. Physical Astronomy. *Two hours.* Professor CURTISS.

PHYSICS

FOR UNDERGRADUATES

Z. Physics for Admission. Dr. LINDSAY.
1. General Physics. *Four hours.* Professor HENDERSON.
2. General Physics. *Four hours.* Dr. RICH.
1*a*. Problems. *One hour.* Dr. RICH.
2*a*. Problems. *One hour.* Dr. RICH.
1E. General Physics. *Five hours.* Professor HENDERSON and Dr. RICH.
2E. General Physics. *Five hours.* Dr. RICH.
3. Laboratory Work. Assistant Professor COLBY, Dr. LINDSAY, and Dr. KENT.

FOR UNDERGRADUATES AND GRADUATES

5. Electrical Measurements. *Four hours.* Professor SMITH and Dr. KENT.
6. Advanced Electrical Measurements. *Four hours.* Professor SMITH and Dr. KENT.
8. Advanced Physics.—Electricity, Magnetism, and Light. *Four hours.* Assistant Professor WILLIAMS.
9. Direct Current Machinery. *Two hours.* Assistant Professor WILLIAMS.
17. Recent Progress in Physics. *Two hours.* Professor RANDALL.

FOR GRADUATES

24. Theory of Light. *Two hours.* Assistant Professor COLBY.

29. Advanced Laboratory Work. *Two hours.* Professor RANDALL.

31. Thermodynamics I. *Two hours.* Assistant Professor COLBY.

38. Research. Professor RANDALL.

CHEMISTRY

FOR UNDERGRADUATES

1. General and Inorganic Chemistry. *Two hours.* Dr. HARRIS and assistant.

1*a*. General and Inorganic Chemistry. Laboratory Work *Two hours.* Dr. HARRIS and assistant.

2. General and Inorganic Chemistry. *Two hours.* Professor LICHTY and assistant.

2*a*. General and Inorganic Chemistry. Laboratory Work. *Two hours.* Professor LICHTY and assistant.

3. Qualitative Analysis. *Five hours.* Mr. MCALPINE.

3*a*. Qualitative Analysis. *Four hours.* Mr. COLE.

12*s*. Household Science. *Three hours.* Professor ZIEFLE.

FOR UNDERGRADUATES AND GRADUATES

6*s*. Inorganic Preparations. Laboratory Work. *Two or four hours.* Professor LICHTY.

5. Quantitative Analysis. Beginning Course. *Five hours.* Assistant Professor WILLARD and assistant.

28. Advanced Quantitative Analysis. *Three to five hours.* Assistant Professor WILLARD and assistant.

30. Advanced Qualitative Chemistry. *Two hours.* Mr. COLE.

10*s*. Organic Chemistry. *Two hours.* Dr. KAMM.

42. Organic Preparations. *Two to five hours.* Dr. KAMM and Mr. PERKINS.

8*s*. Elementary Theoretical and Physical Chemistry. *Two hours.* Dr. BARTELL.

8E. Elementary Theoretical and Physical Chemistry. *Three hours.* Dr. BARTELL.

9*s*. Physical Chemistry Applied to Analysis. *Two hours.* Assistant Professor SMEATON and assistant.

13*s*. Physical Chemical Measurements. Laboratory Work. *Two, four,* or *six hours.* Dr. BARTELL, Dr. FERGUSON, and assistant.

15. History of Chemistry and Development of Chemical Theory from remote times to the present. *Two hours.* Assistant Professor SMEATON.

33*a*. Chemical Technology of Fuel Utilization. See Chemical Engineering 2, page 502.

35. Technical Gas and Fuel Analysis. See Chemical Engineering 9, page 502.

11*a*. Drug, Assaying and Pharmacopœial Testing. See Pharmacy 3*s*, page 505.

44*a*. Analysis of Foods, Drugs, etc. See Pharmacy 44*s*, page 505.

FOR GRADUATES

37. Original Investigation in Analytical Chemistry. *Credit to be arranged.* Assistant Professor WILLARD.

39. Laboratory Work in Chemical Technology on Chosen Subjects. Professor WARE.

16. Laboratory Research in Inorganic Chemistry. *Credit to be ar*ranged. Professor LICHTY.

17. Laboratory Research in Organic Chemistry. *Credit to be arranged.* Dr. KAMM.

43. Organic Synthesis and Ultimate Analysis. *Two to five hours.* Dr. KAMM.

49. Laboratory Problems in Organic Chemistry. *Credit to be arranged.* Dr. KAMM.

44*b*. Analysis of Foods, Drugs, etc. *Five hours.* Professor ZIEFLE.

18. Laboratory Research in Physical Chemistry. *Credit to be arranged.* Assistant Professor SMEATON.

21. Laboratory Research in Physical Chemistry. *Credit to be arranged.* Dr. BARTELL.

METALLOGRAPHY

See Chemical Engineering 8, page 502.

MINERALOGY AND PETROGRAPHY

1. Elements of Mineralogy. *Two hours.* Assistant Professor HUNT and Mr. PECK.

17. Gems and Precious Stones. *Two hours.* Professor KRAUS.

4. Determinative Mineralogy. *Two hours.* Assistant Professor HUNT and Mr. PECK.

5. Qualitative Blowpipe Methods. *Two hours.* Assistant Professor HUNT.

9. Lithology. *Two hours.* Assistant Professor HUNT and Mr. PECK.

3. Crystal Measurements. Professor KRAUS and Assistant Professor HUNT.

8. Special Work. *Credit to be arranged.* Professor KRAUS and Assistant Professor HUNT.

Graduate Work.

GEOLOGY AND GEOGRAPHY

21. Teachers' Course in Physiography. *Two hours.* Dr. SAUER and assistant.

23. Geographic Influences. *Two hours.* Dr. SAUER and assistant.

31*a*. Commercial Geography. *Two hours.* Dr. SAUER and assistant.

Graduate Work.

ZOOLOGY

1. Elements of Animal Biology. *Two hours.* Assistant Professor LA RUE and Mr. RUSSELL.

18*a*. Zoology for Teachers. *Two hours.* Assistant Professor LA RUE and Mr. ROGERS.

3*a*. Heredity. *Three hours.* Assistant Professor HEGNER.

For courses in Zoology offered at the Biological Station see page 506.

BOTANY

FOR UNDERGRADUATES

1. Elements of Plant Biology. *Two hours.* Assistant Professor KAUFFMAN.

2*s*. Algae, Liverworts, Mosses, and Ferns. *Four hours.* Assistant Professor KAUFFMAN.

3. Microbiology of Soil, Air, Water, and Food. *Two or four hours.* Professor POLLOCK.

4*s*. Agricultural Botany. *Four or eight hours.* Assistant Professor BARTLETT.

5. Trees and Shrubs. *Two hours.* Professor POLLOCK.

6*s*. Mycology and Plant Diseases. *Four hours.* Assistant Professor KAUFFMAN.

FOR UNDERGRADUATES AND GRADUATES

7*s*. Agricultural Botany. *Four hours.* Assistant Professor BARTLETT.

20. Advanced Mycology and Pathology. *Three or six hours.* Assistant Professor KAUFFMAN.

FOR GRADUATES.

42, 44. Research in Physiology, Soil Biology, and Nutrition of Soil Fungi. *Four, six, or eight hours.* Professor POLLOCK.

46. Research in Bacterial Diseases of Plants. *Four, six, or eight hours.* Professor POLLOCK.

50. Mycology and Pathology. *Hours to be arranged.* Assistant Professor KAUFFMAN.

54. *Credit to be arranged.* Assistant Professor BARTLETT.
For courses in Botany offered at the Biological Station see page 506.

LANDSCAPE DESIGN

1*s*. Introduction to the Study of Landscape Design. *Two hours.* Professor TEALDI.

3*s*. Trees, Shrubs, and Flowers. *Two hours.* Professor TEALDI.

5*s*. Civic Improvements. *Two hours.* Professor TEALDI.

DRAWING

See announcement on page 500.

PHYSICAL TRAINING

The work in Physical Training for Women was given by Miss THERESA BOOTH MALEY. The courses for men were given by Dr. GEORGE A. MAY, Assistant Professor of Physical Training and Director of the Waterman Gymnasium for Men.

COURSES FOR WOMEN

1. General Gymnastics.
2. Corrective Gymnastics for Individual Improvement.
3. Dancing—Aesthetic.
4. Tennis, Archery.
5. Swimming.
6. Normal Class in Folk Dancing and Games for School-Room and Play-ground.

COURSES FOR MEN

1. General Gymnastics and Physical Training.
2. Corrective Gymnastics.
3. Treatment of Emergencies.
4. Anthropometry.
5. Special Contest Exercises.

COLLEGES OF ENGINEERING AND ARCHITECTURE

ENGLISH

1. Theme-Writing and Oral Exposition. *Four hours.* Mr. THORNTON.
9. Business English. *Two hours.* Assistant Professor MORIARTY.
10. Business English. *Two hours.* Assistant Professor MORIARTY.
11. The Teaching of Business English in High Schools. *Two hours.* Assistant Professor MORIARTY.

GERMAN

1*s*. Beginners' Course. *Six hours.* Assistant Professor HAUHART.
1. Beginners' Course. *Four hours.* Dr. SCHWABE.
4. German Scientific and Technical Literature. *Four hours.* Assistant Professor LEE.

FRENCH

1*s*. Beginners' Course. *Six hours.* Mr. HURLBURT.
1. Beginners' Course. *Four hours.* Mr. RATHKE.

SPANISH

See announcement of courses on page 488.

POLITICAL ECONOMY

See announcement of courses on page 491.

LAW

See announcement of courses on page 504.

MATHEMATICS

1*a*. Trigonometry. Professor KARPINSKI.
1. Algebra and Analytic Geometry. *Four hours.* Mr. MILLER.
2. Analytic Geometry. *Four hours.* Mr. ROUSE.
3. Calculus. *Five hours.* Dr. KUESTERMANN.
4. Integral Calculus and Differential Equations. *Five hours.* Mr. POOR.

ASTRONOMY

See announcement of courses on page 494.

PHYSICS

See announcement of courses on page 494.

CHEMISTRY

See announcement of courses on page 495.

METALLOGRAPHY

See announcement of courses on page 496.

MINERALOGY

See announcement of courses on page 496.

GEOLOGY

See announcement of courses on page 497.

DRAWING

A. Free-Hand Drawing in Charcoal and Pencil. Mr. BARNES.

B. Free-Hand Drawing in Pencil, Wash, or Color. Mr. BARNES.

C. Descriptive Geometry. *Four hours.* Mr. TANGHE.

1. Geometrical Drawing. *Two, three, or four hours.* Assistant Professor FINCH.

4. Descriptive Geometry I. *Two hours.* Mr. TANGHE.

5. Descriptive Geometry II. *Two hours.* Mr. TANGHE.

4*a*. Descriptive Geometry and Shades and Shadows. *Three hours.* Assistant Professor FINCH.

5*a*. Perspective and Stereotomy. *Two hours.* Assistant Professor FINCH.

SHOP PRACTICE

1*s*. Wood Shop. *Two hours.* Mr. YEATMAN.

2*s*. Forge Shop. *Two hours.* Mr. YEATMAN.

3*s*. Pattern-making and Foundry. *Four hours.* Mr. YEATMAN.

4*s*. Machine Shop. *Four hours.* Mr. SWEET.

5. Instrument-making. *Two hours.* Mr. STEVENSON.

SURVEYING

3*s*. Summer Camp. Field Work. *Eight hours.* Professor JOHNSTON and others.

4*s*. Use of Instruments. *Two hours.* Assistant Professor RASCHBACHER.

ENGINEERING MECHANICS

1. Kinematics, Statics. *Four hours.* Mr. ERICSON and Mr. BOSTON.

2. Strength of Materials. *Three hours.* Assistant Professor STEVENS.

3. Dynamics. *Three hours.* Assistant Professor STEVENS.

4. Hydromechanics. *Two hours.* Mr. BOSTON.

MECHANICAL ENGINEERING

1. Machine Drawing. *Two hours.* Assistant Professor PAWLOWSKI.

2. Elements of Machine Design. *Three hours.* Assistant Professor PAWLOWSKI.

3. Steam Engines and Other Heat Engines. *Four hours.* Assistant Professor ROWEN.

4. Hydraulic Machinery. *Three hours.* Professor ZOWSKI.

5. Thermodynamics. *Three hours.* Assistant Professor ROWEN.

7. Mechanical Laboratory. *Two hours.* Assistant Professor EMSWILER.

8. Mechanical Laboratory. *Two hours.* Assistant Professor EMSWILER.

ELECTRICAL ENGINEERING

2. Fundamentals of Electric Circuits and Apparatus. *Four hours.* Professor BAILEY, Assistant Professor LOVELL, and Assistant Professor MACKAVANAGH.

3. Theory of Electric Circuits and Apparatus. *Four hours.* Professor HIGBIE, and Assistant Professor MACKAVANAGH.

4. Advanced Theory of Electric Circuits and Apparatus. *Three hours.* Professor BAILEY, and Assistant Professor LOVELL.

7. Illumination and Photometry, *Two hours.* Professor HIGBIE.

18. Research Work in Electrical Engineering. Professors BAILEY and HIGBIE.

CHEMICAL ENGINEERING

1. Engineering Materials. Professor **Ware**.
2. Fuels. *One hour.* Assistant Professor **Badger**.
8. Metallography. *Two hours.* Assistant Professor **A. E. White**.
9. Technical Gas and Fuel Analysis. *Two hours.* Assistant Professor **Badger**.
12. Chemical Technology. *Three to eight hours.* Professor **Ware**, Assistant Professor **A. E. White**, and Assistant Professor **Badger**.

ARCHITECTURE

ARCHITECTURAL DESIGN

4. Elementary Architectural Design.
5. Intermediate and Advanced Architectural Design.

CONSTRUCTION

21. Carpentry: Materials, Framing, Details.

FREE-HAND DRAWING

A. Drawing in Charcoal and Pencil.
B. Drawing in Pencil, Wash, or Color. *Two hours.* Mr. **Barnes**.

MEDICAL SCHOOL

ANATOMY

1. Laboratory Work in Human Anatomy. Dr. **Worcester** and assistant.
2. Lectures, Recitations, and Laboratory Work in Embryology and Histology. Mr. **Guild**.

BACTERIOLOGY

1. Laboratory Work in Bacteriology. Mr. **Connell**.
2. Vaccines and Sero-Reactions. Assistant Professor **DeKruif**.

PHYSIOLOGICAL CHEMISTRY

1. Laboratory Work in Physiological Chemistry. Mr. [illegible]

PHYSIOLOGY

1. Laboratory Work in Physiology. Dr. **Cope**.

PATHOLOGY

1. Laboratory Course in Pathology. Professor WARTHIN and Dr. WELLER.
2. Course in Pathological Technique. *Four hours.* Professor WARTHIN and Dr. WELLER.
3. Pathology of the Female Genito-Urinary Organs. Professor WARTHIN and Dr. WELLER.
4. Special Pathology of the Infectious Diseases. Professor WARTHIN and Dr. WELLER.
5. Autopsy Technique for Embalmers.

PHARMACOLOGY

Experimental Pharmacology.

SURGERY

1. Clinical Surgery. Dr. HOYT.
2. Operative Course in Surgical Technique and Operative Surgery. Dr. HOYT.
3. Genito-Urinary Surgery. Professor LOREE.
   a. Surgical.
   b. Cystoscopics.

INTERNAL MEDICINE

1. Clinical Medicine. Dr. SCHMIDT.
2. Clinical Microscopy. Dr. GILBERT.

DISEASES OF THE NERVOUS SYSTEM

1. Clinical Neurology.

OPHTHALMOLOGY

1. Ophthalmic Surgery. Professor PARKER.
2. External Diseases of the Eye. Professor PARKER and Dr. SLOCUM.
3. Refraction. Dr. SLOCUM and Dr. CLAY.

OTOLARYNGOLOGY

1. Clinical Demonstration. Professor CANFIELD and Dr. WENDEL.
2. Operative Surgery.
3. Functional Examination of the Ear.

OBSTETRICS AND GYNECOLOGY

OBSTETRICS

1. Practical Obstetrics. Dr. BARTHOLOMEW.
2. Obstetric Diagnosis. Dr. BARTHOLOMEW.
3. Demonstration and Manikin Course. Dr. BOTTSFORD.
4. Junior Palpation Course. Dr. BARTHOLOMEW.

GYNECOLOGY

5. Clinical Gynecologic Diagnosis. Dr. LOOMIS.
6. Diagnostic and Operative Gynecology. Dr. LOOMIS.

DERMATOLOGY AND SYPHILOLOGY

1. Section Work in Diseases of the Skin and Syphilis. Professor WILE and Dr. ELLIOTT.
2. Syphilology. Lecture and Clinic Course. Professor WILE.

LAW SCHOOL

JUNE 26 TO JULY 29.

FIRST YEAR SUBJECTS

Contracts.—Williston's Cases. *Nine hours a week.* Professor PAGE.

Torts.—Bohlen's Cases. *Six hours a week.* Professor HOLBROOK.

Common Law Pleading.—Sunderland's Cases. *Nine hours a week.* Professor BOGLE.

Property II.—Gray's Cases, Vol. II (end Ed.). *Nine hours a week.* Professor AIGLER.

SECOND AND THIRD YEAR SUBJECTS

Evidence.—Wigmore's Cases. *Six hours a week.* Professor LANE.

Property III.—Aigler's Cases. *Six hours a week.* Professor AIGLER.

Code Pleading.—Sunderland's Cases. *Six hours a week.* Professor BOGLE.

Equity Jurisprudence.—Ames's Cases. *Nine hours a week* Professor RICHARDS.

Mortgages.—Durfee's Cases. *Six hours a week.* Professor DURFEE.

JULY 31 TO SEPTEMBER 1.

FIRST YEAR SUBJECTS

Contracts.—Williston's Cases. *Nine hours a week.* Mr. GRISMORE.

Torts.—Bohlen's Cases. *Six hours a week.* Professor HOLBROOK.

Agency.—Goddard's Cases. *Nine hours a week.* Professor GODDARD.

SECOND AND THIRD YEAR SUBJECTS

Evidence.—Wigmore's Cases. *Six hours a week.* Professor LANE.

Property III.—Aigler's Cases. *Six hours a week.* Professor AIGLER.

Bailments and Carriers.—Goddard's Cases. *Six hours a week.* Professor GODDARD.

Trusts.—Ames's Cases. *Nine hours a week.* Professor HOHFELD.

Judgments.—Rood's Cases. *Six hours a week.* Professor ROOD.

Wills.—Gray's Cases. Vol. 4. *Nine hours a week.* Professor ROOD.

COLLEGE OF PHARMACY

1*s*. Theory of Pharmacy. *Four hours.* Professor STOCKING.

7*s*. Manufacturing Pharmacy. *Four hours.* Professor STOCKING.

3*s*. Pharmacopoeial Testing and Drug Assaying. *Four hours.* Professor STOCKING.

44*s*. Food and Drug Analysis. *Three or five hours.* Professor ZIEFLE.

12*s*. Household Science. *Three hours.* Professor ZIEFLE.

LIBRARY METHODS

The following instruction was given under the direction of Librarian W. W. BISHOP:

1. Cataloging.
2. Classification.
3. Reference Work.
4. Book-Binding.
5. Children's Libraries.

BIOLOGICAL STATION

ZOOLOGY

101. The Natural History of Vertebrate Animals. *Two hours.* Assistant Professor **Ellis.**

103. The Natural History of Invertebrate Animals, Exclusive of Insects. *Four hours.* Professor **Strong.**

105. The Natural History of Insects. Assistant Professor **Ellis.**

107. The Natural History of Birds. *Four hours.* Professor **Strong.**

109. Special and Research Work in Zoology. *Two, four, six, or eight hours.* Professor **Glaser**, Professor **Strong**, Assistant Professor **Ellis**, and Dr. **Cort.**

BOTANY

102. Field and Forest Botany. *Four hours.* Dr. **Holman.**

104. Systematic Botany. *Two hours.* Dr. **Ehlers.**

106. Ecology. *Four hours.* Assistant Professor **Gates.**

108. Plant Anatomy. *Two hours.* Dr. **Holman.**

110. Advanced Systematic Botany. *Two hours.* Dr. **Ehlers.**

112. Special and Research Work in Botany. *Two, four, six, or eight hours.* Assistant Professor **Gates**, Dr. **Holman** and Dr. **Ehlers.**

EMBALMING AND SANITARY SCIENCE

1. Bacteriology and Sanitary Science. Dr. **Partridge.**
2. Chemistry. Assistant Professor **Hale** and assistant.
3. Anatomy. Mr. **Hoag.**
4. Autopsy Technique. Professor **Warthin.**
5. Mortuary Law. Professor **Rood.**
6. Practical Embalming. Mr. **Askin.**

List of Graduates of 1916*

COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS†

BACHELOR OF SCIENCE

(IN FORESTRY)

Ernest John Allmendinger
Clyde Emerson Bastian
Simeon Rexford Black
Melvin Ira Bradner
Albert Keene Galloway
*Raymond Frederick Grefe
George Maxwell Hoak
Seth Guilford Hobart
Wilson Gordon Homer
Walter Ehresmann Jotter
Owen Lloyd Lovejoy
Frederic Joachim William Soll
Lester Charles Staudt
Harold Lorenzo Tandy 14

BACHELOR OF SCIENCE

(IN CHEMISTRY)

Charles William Anderson
William Carlos Dowd
Nettie Zoble 3

BACHELOR OF SCIENCE

Charles Edward Anderson
George Roy Backus
Donald Kay Bacon
Theodore Swift Barnett
Frederick Franklin Blicke
Charles Ancil Bosworth
Harold Mathew Bowcock
Lyman Crowell Boynton
George J. Busman
Clarence Arthur Christensen
  As of the Class of 1914
John Timon Connell
James Murle Cork
Roland Spuhler Cron
Fred Plumer Currier
**Bernhard Hildebrandt Dawson
  With Special Mention in Astronomy
John Otto Dieterle
Douglas Donald
Arvid Waldemar Erickson
John Frederick Edward Foss
Ralph James Frackelton
Helen L. B. Gage
Albert J. Gans
Roy Mark Greenthal
Merit Donald Haag
George Rudolph Herrmann
Dorothy Baxter Inglis
Tsoong Ching Lieu

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* The list of Graduates contains the names of all persons on whom degrees were conferred during the year 1916.

† Those graduates of the College of Literature, Science, and the Arts whose names are preceded by an asterisk (*) receive their degrees "With Distinction"; those whome names are preceded by a double asterisk (**) receive their degrees "With High Distinction."

Po Shue Lo
George McClure
Clement Hooven Marshall
Maynard Amos Norris
Daniel Ignatius Clyde Reynolds
Joseph Schober Richtig
Juan Rodriguez
Henry Ray Russell
James Harold Smith
Chow Foung Tang
Sotaro Tokuyama
Thomas Lawrence Tolan
Eugene Frederick Traub
Vivian Arthur Van Volkenburgh
Elbridge Robinson Waite
Gaillard Peter Willett
Dolphus Williams

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BACHELOR OF ARTS

Anna Olivia Adair
George Edward Adams
John Quincy Adams
Albert Allen
Edwin David Allmendinger
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William Preston Wickham
Da Chang Wu
John Ralph Zenisek 71

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Mary Ruth Connely	Adrian
Elizabeth M. Connor	Owosso
Manuel José Constain	Manizales, Colombia
Albertus John Cook	Grand Haven
Arthur Eaton Cook	Kendall
Edna Mae Cook	Coopersville
† Florentine Wilhelmina Cook, *g*	Hillsdale
Harold Lucius Cook	Pittsfield, Mass.
Howard Jennings Cook	Brant
Hugh Augustus Cook	Grand Rapids
Lewis Nelson Cook	Milwaukee, Wis.
Margaret Carroll Cook	Fowlerville

Edwin Theodore Cooke	Fayette, Ohio
Jean Paul Cooley	Erie, Pa.
Margaret Horton Cooley	Ann Arbor
Palmer Bennett Coombs	Kalamazoo
Murray Arthur Coon	Indiana, Pa.
Chauncey Veon Cooney	Sault Ste. Marie, Ont.
Frances Marie Cooney	Detroit
Lucille Elizabeth Cooney	Pekin, Ill.
George William Cooper	Hagerstown, Md.
Hester Laura Cooper	Detroit
John Whitehead Cooper	Manistique
Benjamin Coplan	Escanaba
Elaine Florence Corbett	Menominee
Cecil Bradford Corbin	Alpena
Lena Francis Corbin	Ann Arbor
Thomas Aloysius Corcoran	Groton, N. Y
William Alfred Corcoran	Escanaba
Winifred Helen Corcoran	Saginaw
Alton Wilcox Corey	Owosso
Marie Cornwell	Ann Arbor
Lisle Chester Cortright	Nashville
George William Corwin	Saint Johns
Edward William Cory	Blissfield
William Winton Coslet	West Unity, Ohio
Harry René Cossitt	LaGrange, Ill.
Charles Halstead Cottington	Chicago, Ill.
Wilbur Miller Cotton	Dayton, Ohio
Chester Coulter	Frankfort, Ind.
Harold Bertrand Coulter	Chittenango, N. Y.
Cecile Mae Coulthard	Detroit
Mary Elizabeth Covell	Whitehall
Harold Eells Covert	Ann Arbor
Rhea Eels Covert	Ann Arbor
Blanche Rose Covey	Coldwater
Benjamin Gretton Cowan	Walla Walla, Wash.
Walter Greggory Cowan	Walla Walla, Wash.
Holland Miller Cowen	Detroit
Nettie Alma Cowin	Mesick
Theodore Sullivan Cox	Washington, D. C.
Gladys Irene Cozadd	Orion
Donald Wynell Crabbs	Morenci
William Donald Craig	Detroit
Edison Henry Cramer	Grand Rapids
Paul Maynard Cramer	Akron, Ohio
Adele Louise Crandall	Ann Arbor
Mary Blanche Crandall	Howell
William Tilden Crandell	Belleville
George Marshall Crawford, Jr.	Topeka, Kans.
Malcolm James Crawford	Rosebush
Roland James Crawford	Ithaca
Earl Henry Cress	Grand Rapids
Elmer Weirich Cress	Grand Rapids
Margaret Adele Creswell	Grand Rapids
Lucile Crissey	Oak Park, Ill.
Mildred Jean Crissey	Oak Park, Ill.
James Cobb Crittenden	Portland
Lionel George Crocker	Ann Arbor
Alexander Charles Crockett	Detroit
Grace Crockett	Wailuku, Hawaii
Esther Lustig Crohn	Pontiac
Fannie Marion Crohn	Pontiac
Margaret Elizabeth Cronin	Highland Park
Arthur Earl Cross	Saint Ignace
Arthur Gordon Cross	Muskegon

Cecil Frank Cross	Wayne
† John Russell Crossland, *m*	Saint Joseph, Mo.
John Davis Crossley	Rockville, Conn.
Alfred Harry Crum	Forest, Ohio
Denman Hirth Cruttenden	Quincy, Ill.
Merlin Alfred Cudlip	Iron Mountain
Helen Margaret Cullen	Isle Saint George, Ohio
Frank Ward Culver	Detroit
Cecil Rhodes Cummings	Carson City
Edwin Kendall Cunliffe	Detroit
Lillian Currah	Windsor, Ont.
Robert Atlee Curran	Aurora, Ill.
James Leo Curtin	Forest, Ohio
Percy Nelson Curtis	Edmore
Armando Daniel Cusicanqui	Shelby
Nicholas Thomas Dabelich	Leadville, Colo.
Algot John Dahlberg	Escanaba
Carl Enoch William Leonard Dahlstrom	Grand Rapids
Helen Ruth Dailey	Detroit
Leo Alfred Daines	Jackson
Clarence Herbert Daley	Ann Arbor
Homer Leo Dalton	Frankfort, Kans.
Robert Bruce Dancer	Stockbridge
Bert Julius Dandoy	Marquette
George Ball Daniels	Detroit
Russell Howard Daniels	Syracuse, N. Y.
David Samuel Dann, *m*	Detroit
† Donald Benjamin Darling, *d*	Ann Arbor
William Major Darnall	Washington, D. C.
Chester Tom Darnton	Adrian
Peter H. Y. Darpinian	Big Rapids
Nora Elizabeth Darwin	Fort Worth, Texas
Edna Adelia Daskam	Ann Arbor
Robert Scott Daugherty	Wellington, Ohio
Glaydes Cecil Daum	Port Clinton, Ohio.
Selden Bennetts Daume	Laurium
Carroll Stoll Davenport	Dalton, Pa.
Clarence Paul Davey	Painesdale
William Gilman Davidson	Lewistown, Ill.
Joseph Nicholas Davies	Detroit
Willard James Davies	Sandusky, N. Y.
Caroline Mildred Davis	Dallas, Texas
Edward Carlos Davis	Battle Creek
Frank Davis	Ypsilanti
Georgia Mabel Davis	Fort Madison, Iowa
Helen Genevieve Davis	Jackson
Helen Irma Davis	Grand Rapids
Horace Lee Davis	Ann Arbor
Jay Otis Davis	Rollin
Katharine Noble Davis	Traverse City
Raymond Elmer Davis	Sandusky, N. Y.
Rogers Prewitt Davis	Detroit
Ruby Amanda Davis	Chili Station, N. Y.
Winifred Davy	Evart
Winfield Wells Dawley	Conneaut, Ohio
William Thomas Dawson	Toledo, Ohio
Harry Fred Day	Climax
Marcus Motier Day	Providence, R. I.
Roberta Elizabeth Deam	Bluffton, Ind.
Raymond Silvester Dean	Beech Grove, Ind.
Charles LaVerne Decker	Carthage, Mo.
Florence Alice Dee	Bay City
Walter Leonard Dehner	Whitehouse, Ohio
Herman Jenner DeLano	Otsego

Raymond Mills Dell	Los Angeles, Cal.
Gertrude Olivia Demmon	Grand Rapids
Marelka Catherine Dengler	Kearsarge
Ward Crissman Denison	Romeo
Howard Arthur Dennee	Ann Arbor
Frederic William Dennis, Jr.	Detroit
Richard deNobel	Ashtabula Harbor, Ohio
Gail Ernest Densmore	Mason
Esther Mary Depew	Ann Arbor
Albert George Dersch	Cadillac
Alonzo Benjamin DeSpelder	Detroit
Emerson DeSpelder	Ann Arbor
Harry Herbert Despond	Ann Arbor
Lois Alice Devereaux	Detroit
James Coleman DeVol	Battle Creek
Herman Edward Deyarmond	Detroit
José Leonardo Dias	Callao, Peru
Melvin Neil Dick	Calumet
Delphinus Francis Didier	Detroit
Ruth Mohart Diebel	Bay City
Albert George Diegelman	Pittsburg, Pa.
Gerrit John Diekema, Jr.	Holland
Hilda Caroline Dieterle	Ann Arbor
Robert Richard Dieterle	Ann Arbor
Dirk Rottschafer Dieters	Detroit
Dorothy Dillon	Benton, Ill.
† Goldwin Carrington Dinwiddie, *e*	Portland, Ore.
Lela Alberta Dischinger	Port Clinton, Ohio
Dorothy Helen Diss	Cleveland, Ohio
Ramon Verity Dixn	Bay City
Jean Louise Dixon	Detroit
Harry Clifford Doan	Blissfield
Eva Lillian Dockeray	Ann Arbor
Earl Russell Dodge	Big Rapids
Selwyn Alexander Dodge	Avoca
Leo Thomas Donohue	Waterbury, Conn.
Gustavus Donald	Kearsarge
Lois Evelyn Donaldson	Calumet
Anna Marie Donegan	Ann Arbor
Eugene Vincent Donlan	Clinton, Iowa
Eileen Margaret Donohue	Ann Arbor
John Donovan, Jr.	Belding
Bastian Russell Dooge	Grand Rapids
Robert Grant Dooley	Holyoke, Mass.
Stewart Edward Doolittle	Glen Ridge, N. J.
Myona Lillian Dopp	Detroit
Esther Louise Dorrance	Detroit
Geoffrey Austin Dorsey	Waterville, Wash.
James Allen Dorsey	Dallas, Texas
Robert Henry Dott	Sioux City, Iowa
Elizabeth Woodin Doughty	Beacon, N. Y.
Margaret Douglas	Westfield, N. Y.
Margaretta Biddle Douglas	Grosse Ile
Vernon Andrews Douglas	Great Falls, Mont.
Robert Patterson Douglass	Pittsburg, Pa.
George Christopher Doyle, *m*	West Duluth, Minn.
Harry Charles Doyle	Cheyenne, Wyo.
Thurman Bernard Doyle	Menominee
Edmondo Germaro Doyno	New Castle, Pa.
Rollin Edwards Drake	Ann Arbor
Mary Edgerton Drake	Detroit
Gladys Estella Draper	Grand Rapids
Harold Dieckmann Draper	Saginaw
William Joseph Dressler	Grand Rapids

James Lowell Driscoll	Lead, S. Dak.
Maurice Druker	London, Ont.
Eleanor Elvira Drysdale	Detroit
Eli Anton Du Bois	Green Bay, Wis.
Charles Carroll Dubuar	Northville
Edith Matilda Duemling	Fort Wayne, Ind.
Jennie Alma Duemling	Fort Wayne, Ind.
Werner William Duemling	Fort Wayne, Ind.
Emma Lucile Duff	Grosse Ile
Walter Dufford	Claremore, Okla.
Ralph Eugene Dull	Ohio City, Ohio
Dugald Duncanson	Ann Arbor
Lewis Miller Dunckel	Three Rivers
Earle Waring Dunn	Grand Rapids
Lucile Priscilla Dunn	Hastings, N. Y.
Marguerite Dunn	Ann Arbor
Rodney Arthur Dunnette	Byron, Minn.
Dorothy Durfee	Sylvania, Ohio
Darrell Levi Dwight	Twin Falls, Idaho
John Edgar Dwyer	Ann Arbor
Naomi Gypsie Dysert	Rockford, Ohio
George Nelson Earle	Saint Clair
James Hugh Earley	Shenandoah, Pa.
Kenneth Alexander Easlick	Onsted
Ray Gerald Easton	Ann Arbor
Paul William Eaton	Jackson
Otto Henry Eberwein	Ann Arbor
Alice Freda Eckert	Detroit
Norman Dyer Eckliff	Grand Haven
Florence Evelyn Eddy	Flint
Helen Therese Edmonds	Grand Rapids
Daniel Ward Edwards	Ann Arbor
Edward Tevis Edwards	Phoenix, Ariz.
Grace Ellen Edwards	Detroit
Herman Effron	Mitchell, Ind.
Robert Effron	Mitchell, Ind.
Timothy Frank Egan	Hurley, Wis.
Lawrence Deems Egbert	Pasadena, Cal.
William Howard Eggers	Omaha, Nebr.
Sydney Valentine Eggert	Youngstown, Ohio
Phyllis Egglestone	Ann Arbor
Markus Kaufman Ehlbert	Greenville, Miss.
Arthur William Ehrlicher	Pekin, Ill.
Walter George Eibler	Ann Arbor
Hazel LaVarr Eichar	Rockford, Ohio
Minnie Catharine Einfalt	Saginaw
Wilbur Alexander Eldridge	Bay City
William Clinton Ellet	Three Rivers
Amy Louise Elliott	Indianapolis, Ind.
Jennings Bryan Ellis	Hazleton, Ind.
Remington Ellis	Rochester, N. Y.
Roland Earl Ellis	Akron, Ohio
†Irving Sanderson Ellison, *e*	Williamsport, Pa.
Walter George Elsnau	Manistee
James Samuel Thomas Stranahan Ely	Rutherford, N. J.
Richard Charles Ely	Belmont, N. Y.
Ruth Buchanan Ely	Ann Arbor
Crystal Golding Emerson	Toledo, Ohio
Sameul DeLucena Ingham Emerson, Jr.	Pittsburg, Pa.
Charles Philip Emery	Benton Harbor
Ello Elwin Emery, Jr.	Grand Haven
George William Emery	Coloma
Grace Darling Emery	Benton Harbor
John Howard Emery	Bedford, Ind.

Ernest Lawrence Emmerson	Battle Creek
Wilfred Thomas Emmons	Ann Arbor
Marguerite Helena Eness	Grand Rapids
William Homer Englehart	Almedia, Pa.
Arnold Ensel	Springfield, Ill.
Clarence Epstean	New York, N. Y.
Samuel Marcelle Epstein	Kansas City, Mo.
Samuel Paul Epstein	Bayonne, N. J.
Arthur George Eriksen	Manistique
Elsie Louise Erley	Detroit
Carlos Sebastian Esteves	Aguadilla, P. R.
Almancy Lee Evans	Ann Arbor
James Howard Ewen	Saginaw
Anna Louise Ewing	Brooklyn
James Walter Ewing	Rochester, Pa.
Earle Edlin Ewins	Lake Forest, Ill.
Walter William Faben	Toledo, Ohio
Dewey Frank Fagerburg	Paxton, Ill.
Joseph Henry Failing	Ann Arbor
Margaret Beatrice Fales	Midland
William Henry Fallon	Pittsfield, Mass.
Alice Aileen Farrell	Detroit
John Franklyn Farrell	Dalton, Mass.
William Kenneth Faunce	Youngstown, Ohio
† Lawrence Wilheim Faust, *m*	Deadwood, S. Dak.
William Crawford Faust	Grand Rapids.
William Perrin Favorite, Jr.	Bay City
Evelyn Marie Favreau	Detroit
Fred Bingham Fead	Port Huron
Arthur Feibus	Youngstown, Ohio
Ruth Lucile Feiner	Ann Arbor
Hussein Shefik Feizy	Constantinople, Turkey
Helen Esther Feldkamp	Danville, Ill.
Edwin Henry Felt	Washington, D. C.
Harold Bartholomew Fenech	Windsor, Ont.
Morris Edward Fenias	Newark, N. J.
Howard Fowler Fenstemaker	Berwick, Pa.
Russell Franklin Fenton	Detroit
† Florence Fenwick, *g*	Ann Arbor
Clarence Newton Ferguson	Sault Ste. Marie
George Robert Ferguson	Reading, Pa.
Hazel Ferguson	Marquette
Hope Easter Ferguson	Birmingham
Lillian Margaret Ferguson	Sault Ste. Marie
Thomas Alden Ferris	Highland Park
Florence Lillian Field	Detroit
Stanley Lyon Fildew	Pontiac
Russell Leslie Finch, *m*	Marquette
Alfred Louis Finegan	West Rush, N. Y.
Laura Evangeline Finegan	West Rush, N. Y.
Edward Bennett Finley	Hartford
James Crampton Finn	Detroit
Miles A. Finsterwald	Detroit
Mary Elizabeth Firestone	Ann Arbor
Julius Fischbach, Jr.	Huntington, W. Va.
Charles William Fischer, Jr.	Chicago, Ill.
Lois Armyne Fischer	Ann Arbor
Alice Marie Fish	Grand Rapids
Howard Granger Fishack	Port Clinton, Ohio
† George Edward Fisher, *e*	Greenville, Pa.
Myron Merle Fisher	Columbia City, Ind.
William Emery Fitch	Detroit
Harold Alvin Fitzgerald	Flint
Florence Dwier Fitzpatrick	Philadelphia, Pa.

Robert Finletter Fitzpatrick	Philadelphia, Pa.
Wilma Flack	Fredonia, Kans.
Ruth Esaline Flanagan	Detroit
Hudson Will Fleischhauer	Reed City
William Mark Fleischman	Detroit
Rosalynd Zoe Fleming	Saint Louis, Mo.
Russell Wallace Fleming	Detroit
Gordon Grant Fletcher	Detroit
Harold Thompson Fletcher	Grand Rapids
Anthony Gerard Flieger	Nijmegen, Netherlands
Hilda Maria Flink	Ironwood
Thomas Stanhope Flournoy	Morganfield, Ky.
Florence Carl Fogg	Toledo, Ohio
Bertha Vivian Foler	Dansville
Albert Clarence Foley	Paris, Ill.
John Edward Foley	Dollar Bay
Val Lawrence Follo	Escanaba
Robert Fitch Folsom	Mount Clemens
Ralph Eugene Folz	Kalamazoo
John Willard Fonner	Union City
Robert Milton Fonner	Union City
Stanley George Fontanna	Powers
David Alexander Forbes	Grand Rapids
Adelbert Ford	Houghton
Frank J. Forshee	Ann Arbor
Marcella Constance Forster	Oxford
Harold Burton Forsythe	Saginaw
Richard Alexander Forsyth	Gladstone
Harry Cadwallader Fortner	Catawissa, Pa.
William Peter Fortune	Springfield, Ill.
Harold Gifford Foster	Plano, Ill.
Hazen Foster	Caledonia, N. Y.
Willard Foster	Youngstown, Ohio
William Allan James Fox	Youngstown, Ohio
Frank James Fox	Ann Arbor
Helen Edith Fox	Jackson
William Wilson Fox	Mount Clemens
Marjorie Lucile Frace	Ironwood
Henry Davis Fralick	Grand Rapids
Orpha Ennest Fralick	Maple City
Wesley George France	Sault Ste. Marie
Sigmund Frank	Detroit
George Alfred Franke	Shelby
Donald Lovat Fraser	Bessemer
Russell Davis Fraser	Lakeview
James Maurice Frazier	Elwood, Ind.
Frank Freeman	Denver, Colo.
Jiles Edward Freeman	Ann Arbor
Louis Hill Freidenberg	Detroit
Horace Lester French	Lansing
Laura Frances French	Ann Arbor
Lucie Ellen French	Ann Arbor
Merle Boice Fretz	Newberry
Jerome Julius Ferundlich	Mansfield, Ohio
Edward Shriver Frey	Ann Arbor
James George Frey	DuBois, Pa.
Roy Henry Fricken	Grundy Center, Iowa
Isador Harold Friedman	Cleveland, Ohio
Maurice David Friedman	Cleveland, Ohio
Earl John Friedmeyer	Springfield, Ill.
Milton Henry Friend	Chicago, Ill.
Annabelle Norris Frink	Detroit
Caryl Joy Frink	Chicago, Ill.
Marian Frisbie	Toledo, Ohio

Max Mark Frocht	Detroit
Fayette Lawrence Froemke	Sheldon, N. Dak.
Gerald William Froemke	Sheldon, N. Dak.
Catherine Sarah Frost	Kalamazoo
Jeanie Florence Frost	Monroeville, N. J.
Walter Sidney Fruland	Ottawa, Ill.
Clem Allen Frye	Albion
Zola Lorena Frye	Chadron, Nebr.
Zalman Behr Fryman	Petoskey
Carrie Helen Fuerstenau	Sagman
Harold Leonard Fuller	Pentwater
Hazel G. Fuller	Vermontville
Leon Webber Fuller	Stockbridge
Ola Esper Fuller	Wichita, Kans.
Benjamin Rush Fullerton	Ann Arbor
Margaret Fullerton	Ann Arbor
Cyrus Ritter Funk	Cassopolis
Clyde Alden Furgason	Jackson
Hermon Fairchild Furst	Newark, N. J.
Charles Edward Futch	Cleveland, Ohio
James Raymond Gabell	Detroit
Norman Edward Gable	Detroit
Arthur Gerald Gabriel	Detroit
Wood Hatfield Gageby	Indianapolis, Ind.
Groeso Grace Gaines	Ann Arbor
Joseph Thomas Gallagher	Shenandoah, Pa.
Marion Charlotte Galton	Algonac
Patrick Joseph Galvin	Sault Ste. Marie
Merle Perry Gamber	Muskegon
* Lytton Dunn Gamble	Coldwater
John Saké Gambs	Washington, D. C.
Earl Francis Ganschow	Saginaw
Fred Aloysius Gariepy	Harbor Springs
Louis Joseph Gariepy, Jr.	Harbor Springs
Hale Garner	Pontiac
Myron Elnathan Garner	Fredonia, Pa.
Freda Lavera Garrett	Ypsilanti
Herbert Card Garrison	Ann Arbor
Howard Louis Garry	Lockport, N. Y.
Consuelo Garza Garwood	Ann Arbor
Earle Frederic Gasar	Grand Rapids
Clarence Gascho	Noblesville, Ind.
Flora Belle Gates	Sandusky
Orville Erastus Gates	Ovid
Ralph Everett Gault	Flint
Mildred Eloise Gebhart	Grand Rapids
Oscar Herman Gehlbach	Lincoln, Ill.
Ormond Daniel Geib	Groton, S. Dak.
Paul Harold Geiger	Sturgis
Samuel Geisenberger, Jr.	Natchez, Miss.
Lowell Burke Genebach	Battle Creek
Ernest Eugene Michael George	Flint
Florence Louise George	Detroit
Helen Russell George	Ann Arbor
Richard Everett George	Ann Arbor
George Edward Gerken	Toledo, Ohio
Clinton Harmon Gernert	Louisville, Ky.
William Ernest Ghent	Ann Arbor
Florence Mary Gibson	Ann Arbor
Helen Jane Gibson	Ann Arbor
Irma Hazel Giddings	Lawton
Raymond H. Gier	Lansing
Selma Mabel Giertz	Detroit

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* Died January 14, 1917.

Tacitus P. Gies	Ann Arbor
Herbert William Giessing	East Saint Louis, Ill.
Helen Gertrude Gifford	Flint
Oscar William Gilbart	Saint Petersburg, Fla.
Charles Dennison Gilbert	Algonac
Delcia Marguerite Gilbert	Moline
Gertrude Eliza Gilbert	Charlotte
Paul Gilkeson	Sellersville, Pa.
Frances Treat Gill	Ann Arbor
Charles Henry Gillespie	Brooklyn, N. Y.
Helen Gillespie	Battle Creek
Edward Porter Gillette	Toledo, Ohio
Marcus Mandle Gilman	South Bend, Ind.
Michael James Gilmartin	Oakland, Cal.
William Henry Gilmartin	Fort Worth, Texas
Mary Barton Gilmore	Fredonia, Kans.
Golda Molka Ginsburg	Detroit
Joseph Heaman Ginsburg	Mount Clemens
Lionel Leo Ginsburg	Chicago, Ill.
John Frederick Gipner	Niles
Celia Marie Girardin	Detroit
Beatrice Irene Girvin	Buffalo, N. Y.
Harry Thomas Gisborne	Montpelier, Vt.
Eugene Given	East Chicago, Ind.
Benjamin Ira Glaser	South Bend, Ind.
Kathryn Cowley Glass	Battle Creek
Ethel Harriet Glauz	Grand Rapids
Frances Glenn	Tarentum, Pa.
Lynn Amariah Glover	Ann Arbor
Fred Carrol Goddard	Ann Arbor
Alva Josiah Godshalk	Three Rivers
Clarence Edwin Godshalk	Three Rivers
Minnie Goehring	Grand Island, Nebr.
Angus Gerald Goetz	DeTour
Frank Roy Goetz	DeTour
William Elmer Goetz	Ann Arbor
Milton Harris Goldberg	Sullivan, Ind.
Sylvester Emanuel Goldberg	Detroit
Lawrence Lyon Goldsmith	New York, N. Y.
Norton Lambert Goldsmith	Louisville, Ky.
Richard Goldsmith	New York, N. Y.
Charles Lazarus Goldstein, *l*	Detroit
Sidney Isidor Goldstein	Saginaw
William Goldstein	Saint Clair
Melvin Ralph Gombrig, *l*	Chicago, Ill.
William Arthur Gonter	Ann Arbor
Helen Marie Good	Tiffin, Ohio
Blanche Emma Goodell	Ecorse
Lily Eliza Goodhew	Ann Arbor
Edmond Tuttle Goodrich	Detroit
Myrna Esther Goodrich	Ann Arbor
Sarah Light Goodwin	Bay City
Alfred Samuel Goorin	Pittsburg, Pa.
Charles Russel Gordon	Robinson, Ill.
Edna Isabel Gordon	Ann Arbor
Edwin Carlyle Gordon	Superior, Wis.
Mark Wendell Gordon	Fenton
Paul Walker Gordon	Oquawka, Ill.
William Gordon	Fenton
Agnes Harriet Gorman	Chelsea
Claude Clement Gormely	Newberry
Victor Francis Gornall	Fowler, Ind.
Abraham Jacob Gornetzky, *l*	Detroit
Inez Marie Gose	Hennessey, Okla.

Helen Mae Goshorn	Grand Rapids
Frances Evelyn Gospill	Sturgis
Robert Benjamin Gotfredson	Detroit
Laurence McKinley Gould	Lacota
Louise Josephine Gould	Owosso
Helen Dale Grable	Otsego
Clifford Chester Gracey	Cass City
Harold Walker Graham	West Glover, Vt.
William Norman Graham	Chicago, Ill.
William Ellicott Grainger	Kansas City, Mo.
William Henry Granse	Saginaw
Arthur Watson Grant	Millers, N. Y.
Kathryn Anne Grant	Detroit
Ida Eunice Gratton	Duluth, Minn.
Carmen Richardson Graves	Saint Petersburg, Fla.
George Proudfoot Graybiel	Caledonia
Carlton Grant Green	Owosso
John Sidney Green	Saginaw
Raymond Leaver Green	Toledo, Ohio
Stuart Anson Green	Mount Clemens
Solbert Louis Greenberger	Salem, Ohio
Rebecca Greenburg	Myerstown, Pa.
Gladys Elfreda Greening	Ann Arbor
Allen Thayer Greenman	Boyne City
Emerson Frank Greenman	Owosso
Frank LeRoy Greenwald	Whiting, Ind.
Harlow Grey	Ann Arbor
Walter Friedrich Gries	Laurium
Grace Griffin	Lima, Ohio
Constance Dengler Griffith	Wilkinsburg, Pa.
Alton Woodhams Grigg	Detroit
Roy Grinker	Chicago, Ill.
Francis Vaniman Grise	Gettysburg, Ohio
Henrika Albertine Gronblad	Escanaba
Clara Harrison Grover	Grand Rapids
Frank William Grover	Detroit
James Thomas Groves	Dallas, Texas
Ruth Brown Grow	Mason
Roy William Grumbine	Freeport, Ill.
Dorothy Winchester Gruss	Detroit
Richard Gerveys Grylls	Detroit
Donald Welsh Gudakunst, *m*	Saginaw
Earl Edward Gudakunst	Saginaw
Karl Willard Guenther	Lansing
Arthur Abraham Guettel	Kansas City, Mo.
Kelsey Guilfoil	Chicago, Ill.
Frances Marie Guilford	Friendship, N. Y.
Roy Jefferson Gulick	Alma
Gertrude Elizabeth Gunn	Detroit
Kathleen Ona Gunn	Muskegon
Mark Gunville	Ishpeming
Harry Gussin	Detroit
Herbert Alexander Gustin	Bay City
Julius Walter Haab	Ann Arbor
Elsa Emilia Haag	Port Huron
† Howard Lee Haag, *g*	Ann Arbor
Edward Hurley Haan	Holland
Charles Louis Haas, *l*	Braddock, Pa.
Frank Hackett	Detroit
Neil Arner Hackstadt	Saginaw
Anna Elizabeth Haffner	Detroit
Doris L. Hafford	Albion
George Ricker Hageman, *m*	Spokane, Wash.
Grace Katherine Hagen	Alpena

Nora Caroline Hagen	Sturgis
Olive Irene Hagen	Lake Linden
Beatrice Marie Hagens	Grand Rapids
Andrew Comstock Haigh	Detroit
Arthur Mott Haight	Climax
Charles Everett Haines	Nashua, N. H.
Keet William Halbert	Ann Arbor
James Wood Halfhill, Jr.	Lima, Ohio
Alger James Hall	Pinckney
Alice Mae Hall	Ann Arbor
Elizabeth Olivia Hall	Ann Arbor
Fay Susan Hall	Manistee
Frances Elizabeth Hall	Canandaigua, N. Y.
Grace Edwards Hall	Detroit
Lucile Eliza Hall	Lawton
Mabel Louise Hall	Toledo, Ohio
Sarah Ackland Hall	Ann Arbor
Paul Martin Haller	Ann Arbor
Richard Vernon Haller	Wooster, Ohio
Max Halperin	Bayonne, N. J.
Robert Herbert Halstead	Lansing
Clifford William Ham	Ann Arbor
Chester Raymond Ham	Ann Arbor
Ada Irene Hamilton	Ann Arbor
Chester Hugh Hamilton	Detroit
Evlyn Roy Hamilton	Detroit
Gladys Irene Hamilton	Cadillac
Sue Cleveland Hamilton	Ann Arbor
Herschel Albert Hamlin	Wolcottville, Ind.
Helen Gertrude Hammels	Glendale, Ariz.
James Vinton Hammels	Glendale, Ariz.
Donald Henry Hammond	Reed City
John Peyton Hampton	Oklahoma City, Okla.
Morris Kingsbury Hand	Detroit
Kathryn Frances Handibo	Calumet
Rosemary Handibo	Calumet
Chester Aritus Hane	Detroit
John Harold Hanger	Armington, Ill.
Vera Adele Hangsterfer	Ann Arbor
Joseph Anthony Hanish	Grand Rapids
Walter Hackler Hanks	Rock Springs, Wyo.
Mark Elliott Hanna	Birmingham
Harvey Robert Hansen	Detroit
Helen Lois Hansen	Hendricks Quarry
† Margaret Eustis Hanson, *g*	Pontiac
Ralph Warren Harbert	Detroit
Isabel Warner Hardie	Evanston, Ill.
Clarence Woodson Hardy	Tecumseh
Richard LeRoy Hardy	Kenosha, Wis.
Bernard Edward Harkins	Ann Arbor
Don Mahone Harlan	Hudson
Austin Cain Harmon	Detroit
Howard Henry Harpst	Toledo, Ohio
Katherine Wells Harrington	Battle Creek
Ann Eliza Harris	Clarkston
Bruce Alexander Harris	Ann Arbor
Milton Joseph Harris	Cleveland, Ohio
Samuel Lowe Harris	Oklahoma City, Okla.
Wilson Payne Harris	Sandusky Ohio
Harold David Harrison	Ridgeway
Margaret Howard Harrison	Chicago, Ill.
Tinsley Randolph Harrison	Birmingham, Ala.
Abraham Strauss Hart	Chicago, Ill.
Joseph Pembroke Hart	Oneida, Wis.

Lauren Darwin Hart	Howell
Lloyd Commodore Hart, *m*	Kokomo, Ind.
Robert Kenneth Hart	Almont
Thomas Arthur Hart	Saint Johns
Stanley Barnes Hartman	Detroit
Jane Olive Hartsig	Ann Arbor
Irene Eva Hartsuff	Ann Arbor
Edward Walker Hartwell	Muskegon
Albert Boynton Hartz	Detroit
Edith Marion Harvey	Port Huron
Lewis Hurd Haskins	Detroit
†Albert Baird Hastings, *g*	Evanston, Ill.
Ashley Hatch	Jackson
Flora Ellen Hatch	Detroit
Howard Smith Hatch	Aurora, Ill.
† Hyatt Clair Hatch, *l*	Atlanta, N. Y.
Louise Nellie Hatch	Marshall
Marion Cora Hatch	Ann Arbor
Melville Harrison Hatch	Detroit
Mildred Anne Hatch	Ann Arbor
William Ragsdale Hatfield	Bedford, Ind.
John Harold Hathaway	Ann Arbor
Harry Dore Hause	Toledo, Ohio
Harriet Vera Haven	Grass Lake
Beatrice Helen Havinghurst	Toledo, Ohio
Alice Bresnahan Hawes	Jackson
Edward Everett Hawkes, Jr.	Keokuk, Iowa
Harold William Hawkins	Urbana, Ohio
Frederick Truman Hawley	Traverse City
Margaret Helen Hawxhurst	Ann Arbor
Ethel Kittie Hayes	Wagoner, Okla.
Geneva Katharine Hayes	Hastings
James Elmer Hayes, Jr.	Saint Louis, Mo.
Marion Augusta Hayes	Saugatuck
Alfred McPherson Hays	Orient, Ohio
James Kevin Hazel	Fostoria, Ohio
*Mary Christine Head	Ann Arbor
Harold Leslie Heakin	Wilkinsburg, Pa.
Ada Tower Heath	Ionia
Margaret Wilson Heath	Ionia
Robert Francis Heatley	Detroit
Ruth Agnes Hebblewhite	Armada
Carl Edgar Hedblom	Laurium
† Mauritz Gustaf Hedin, *m*	Ironwood
Harry Wefler Heffner	Circleville, Ohio
George Hendrick Heideman	Calumet
Julia Heideman	Calumet
Joseph David Heiman	Butte, Mont.
Frederic Davenport Heisordt	Bay City
Donald Dean Held	Akron, Ohio
Howard Helfer	Naples, N. Y.
John Wendell Helfrich	Muskegon
Robert Myer Heller	Newcastle, Ind.
Ruth Isabel Helm	Marshall
Florence Helmeck	Fort Sam Houston, Texas
Hazen Senter Helmrich	Detroit
Charles Fitch Hemans	Mason
Alta Bina Henderson	Detroit
Irene Baxter Henderson	Mason
Margaret Henderson	Ann Arbor
Marian Mercy Henderson	Detroit
Louis Peter Henkel	Petoskey

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[*] Died March 13, 1917.

Margaret Marie Henkel	Mount Clemens
Edwin Wilhelm Henne	Ann Arbor
Meta Marie Henne	Ann Arbor
Hermann Henze	Iron Mountain
Ludwig Henze	Iron Mountain
Victor Harold Herbert, *l*	Detroit
Abraham Herman	Detroit
Edgar Joseph Hermes	Lansing
Douglas Morton Herrick	Toledo, Ohio
Gerald Anson Herrick	Jamestown, N. Y.
Marcus Chauncey Herring	Saint Joseph
Harold Clement Herron	Grand Rapids
David Hershfield	Kalamazoo
David Ralph Hertz	Cleveland, Ohio
Eva Margaretha Herzberg	Muskegon
Clare Merritt Hess	Adrian
Bertha Anne Hesse	Saginaw
Grace Roberta Hesse	Ann Arbor
Robert Joachim Hesse	Lansing
Darwin McMaster Heston	Evansville, Ind.
Florence Hettinger	Hutchinson, Kans.
Arthur Thieme Heuer	Holland
Hildegarde Marie Heusel	Ann Arbor
Charles Emmons Hewen	Chicago, Ill.
Marguerite Mildred Hewitt	East Lansing
Mary Lulu Hewitt	Grand Rapids
Nina Belle Hewitt B.S. *Michigan Agricultural College.*	East Lansing
Arthur Fisher Heyl	Slippery Rock, Pa.
Frances Carolyn Hibberd	Detroit
Genevieve Mildred Hibbler	Detroit
Luther Limbeck Hickman	Greeley, Colo.
Zora Nell Hickoz	Ann Arbor
Arthur Jacob Hicks	Cass City
Charles Virgil Hicks	Alpena
Ernest Lee Hicks	Ionia
Ralph Wesley Hicks, A.B.	Grand Rapids
William Campbell Hicks	Ann Arbor
Cora Michalene Hiens	Grand Rapids
Lawrence Davison Hiett	Toledo, Ohio
Stella Higgins	Bellevue
John Francis Higginson	Detroit
Egmont Götz Hildner	Ann Arbor
Euthymia Johanna Hildner	Ann Arbor
Wiltrud Hildner	Ann Arbor
Eleanor Barbara Hill	Port Huron
Frances Ann Hill	Colon
Marguerite Mary Hill	Hart
Mildred Paxton Hill	Aurora, Ill.
Samuel Henley Hill, *l*	Arkansas City, Kans.
Akiba Joseph Himmelhoch	Detroit
William Wade Hinshaw, Jr.	Ann Arbor
Lambert Hirsheimer	Pittsfield, Ill.
Helen Pauline Hirth	Ann Arbor
Walter Calvin Hiscock	Ann Arbor
Florian Howard Hiss	Bay City
Henry William Hitchcock	Jackson
Charles Downard Hixson	Ann Arbor
†Ching Tsang Ho, *g*	Canton, China
Leigh Hoadley	Florence, Mass.
Arthur Everett Hobbs	Cranston, R. I.
Nellie Margaret Hobbs	Deckerville
Winifred Sarah Weston Hobbs	Ann Arbor
Henry George Hoch	Adrian

Pauline Caroline Hochrein	Ann Arbor
Frederic Vincent Hodson	Escanaba
Norman Albert Hoefeld	Chicago, Ill.
Alice Maude Hoelzle	Ann Arbor
Harlow Herbert Hoffman	Three Oaks
Hazel May Hoffman	Port Huron
Piet Hein Hofstra	Grand Rapids
William Harry Hogan	Detroit
James Wilbur Hoge	Grand Haven
Drayton Frazer Holcombe	Redford
Marion Louise Holden	Grand Rapids
Esther Turner Holland	Saginaw
† Glenn Leroy Hollenbeck, *l*	Capac
Emmet Louis Hollingsworth, Jr.	Rensselaer, Ind.
Maurice Harold Hollingsworth	Indianopolis, Ind.
Harry McKinley Holmes	Belding
Helen Mary Holmes	Detroit
Hiram Perry Holmes	Detroit
Josephine Marie Holmes	Detroit
Frederick Farrington Holt	Detroit
Hoyt Sumner Holton	Toledo, Ohio
Alice Margaret Holtzapple	Lake Linden
Edward Forrest Holtzman	North Madison, Ind.
Merwin Ritchie Holtzman	North Madison, Ind.
David Charles Holub	Akron, Ohio
Harold Albert Holzaepfel	Sandusky, Ohio
Donald Richmond Hook	Detroit
Iama Czarina Hook	Ann Arbor
Gordon Brooks Hooton	Terre Haute, Ind.
Constance Elizabeth Hopkin	Almont
Stephen Cornwell Hopkins	Cranford, N. J.
Ward Morris Hopkins, *l*	Centerville, N. Y.
Francis Leslie Hopkinson	Big Rapids
Grace Matilda Hopwood	Ann Arbor
Harry Horinbein	Waterbury, Conn.
Harold John Hornberger	Clare
Albert Edward Horne, Jr.	Detroit
Marie Kathaleen Horning	Saginaw
Charles William Horr, Jr.	Wellington, Ohio
Samuel Horwitz	Cleveland, Ohio
Ronald Newell Hoskin	Toledo, Ohio
Ethel Rhea Hosmer	Romeo
Elmer Benjamin Hosom	Jackson
Walter Thomson Hotchkiss	Jamestown, N. Y.
Robert Wood House	Franklin, Tenn.
Lois Eliza Housel	Ann Arbor
Reuben Forsyth Houseman	Detroit
Maurice Keeler Hovey	Romeo
Ralph Walter Hovis	Gibsonburg, Ohio
Brodhead Howard	Grosse Ile
Ervin Howard	Lake Odessa
Ralph Holman Howard	Chillicothe, Ohio
Mary Eliza Howe	Paw Paw
Everts Howe Howell	Elmira, N. Y.
William Edward Howes, *m*	Ann Arbor
Howard Charles Hoyt	Schoolcraft
Margaret Kuhn Hoyt	Kalamazoo
Hsi Chi Hsia	Nanking, China
Cecil Arthur Hubbard	Rochester
Harry Don Hubbard	Ypsilanti
Theodore Huntington Hubbell	Detroit
Clemens Henry Huber	West Bend, Wis.
Howard Lancelot Hucles	Baltimore, Md.
Charlotte Rose Huebner	Detroit

Beatrice Sarah Huff	Detroit
Lucy Mae Huffman	Detroit
Maria Helen Hughes	Alpena
William Robert Huhn	Ann Arbor
George William Hulbert	Ann Arbor
Marguerite Gazelle Hulburd	Ann Arbor
Richard Paul Hummer	Chicago, Ill.
Elden Reed Hunt	Ramsey, Ill.
Leigh Walter Hunt	Washington, D. C.
Horace Eli Hunter	Versailles, Ind.
James Franklin Hunter	Warren, Ohio
Rollin Clarence Hunter	South Lyon
James Walter Howard Hurd	Flint
Flora Eleanor Hurlburt	Ann Arbor
Margaret Arnold Hurst	Onaway
Willard Louis Huss	Three Rivers
Roland Fountain Hussey	Ann Arbor
Hurley Gregg Hust	San Antonio, Texas
Ruth Evelyn Huston	Plymouth
Anne Eleanor Hutchings	Olean, N. Y.
Herbert Edward Hutchinson	Chicago, Ill.
Llewellyn George Hutchison	Grand Rapids
Charles Edgar Hutton, *l*	Sioux City, Iowa
Clifford J. Hutton	Yale
Mathilda Emma Hutzel	Ann Arbor
Franklin Samse Huyck	Sheridan, N. Y.
Edward Norbert Hyatt	Ann Arbor
Harold James Hyde, *h*	Detroit
Edwin Alexander Hyman	Kansas City, Mo.
Sam Robert Hyman	Lebanon, Ohio
Henry Earl Illick	Ann Arbor
Philip M. Iloff	Honesdale, Pa.
Delia Estelle Imerman	Detroit
Parepa Ingraham	Oak Park, Ill.
Louis Richard Inwood	South Bend, Ind.
Arthur George Ippel	Saginaw
Paul Mills Ireland, *m*	Fort Sam Houston, Texas
Hazel Eleen Ireman	Ann Arbor
Louise Adelia Irish	Mount Clemens
Hampton Harrison Irwin	Altoona, Pa.
Julius Hobson Isenberg	Kalamazoo
Doris Israel	Lancaster, N. Y.
John Reno Ives	Ann Arbor
Estella Rebecca Jacka	Calumet
Harold Charles LeBaron Jackson	Detroit
Leila Mae Jackson	Sturgis
Lloyd Moore Jackson	Birmingham
Sidney Kent Jackson	Ligonier, Ind.
Milton Keller Jacobs	Kendallville, Ind.
Abraham Herman Jacoby	Bay City
Benjamin Strauss Jaffa	Roswell, N. Mex.
Elva Marjorie Jahns	Moline, Ill.
Clara M. James	Toledo, Ohio
Doris Katherine James	Ypsilanti
Laylin Knox James	Fostoria, Ohio
Maybelle James	Battle Creek
Thelma Grey James	Detroit
Agnes Lang Jameson	Jackson
Ruth Mildred Jameson	Buffalo, N. Y.
Adelaide Nelle Jarvis	Grand Rapids
Naideau Jarvis	Grand Rapids
Reginald Jeavons	Cleveland, Ohio
Edward John Jeffries	Detroit
Albert Henry Jenkins	East Cleveland, Ohio

William Arthur Jenkins	Jackson
Jesse Chamberlain Jenks	Harbor Beach
Louis Ernest Jennings	Detroit
Ruth Elizabeth Jennings	Ann Arbor
Emma Ferne Jensen	Fowlerville
Evelyn Mellie Jensen	Cheyenne, Wyo.
Paul Edward Jeremiah	Youngstown, Ohio
Nina Lauretta Jermain	Escanaba
James H. Jerome	Saginaw
Annis Jewell	Ann Arbor
Margaret Kimball Jewell	Danville, Ill.
Donald Clark Jewell	Grand Rapids
Clare Mason Jickling	Kalamazoo
Ethel Louise Jocelyn	Ann Arbor
Walter Cunningham Johns	Waterbury, Conn.
Arthur Harold Johnson	Norway
Austin Samuel Johnson	Ann Arbor
Carl Edward Johnson	Spokane, Wash.
Earl Johnson	Grand Rapids
Henry Adolph Johnson, *m*	Ishpeming
Herbert Edwin Johnson	Ironwood
Herbert Gustav Johnson	Chariton, Iowa
John Arthur Johnson	Grand Rapids
John Lawrence Johnson	Ann Arbor
Katherine Harriet Johnson	Wyandotte
Kathryn Selden Johnson	Bay City
LeRoy Johnson	Three Rivers
Lionel Hubert Johnson	Grand Rapids
Lucile Johnson	Buffalo, N. Y.
Ludwig John Johnson	Empire
Moneta Gunilla Johnson	Moline, Ill.
Renus Edward Johnson	Osceola, Nebr.
Roy William Johnson	Grand Rapids
† Vernon Theodore Johnson, *e*	Crete, Ill.
Wallace Miller Johnson	Lansing
William Peter Johnson	Muskegon
Carolyn Emogene Johnston	Grand Rapids
Cecil Adelle Johnston	Northville
Dorothy Merle Johnston	Lansing
Everett Vernon Johnston	Niagara Falls, N. Y.
Harold Muir Johnston	Hillsdale
Wayne Alvin Johnston, *m*	Champaign, Ill.
Charles Shelton Jones	Cascade, Mont.
Clara Irene Jones	Toledo, Ohio
Emery Terry Jones	Divernon, Ill.
Gretchen Jones	Akron, N. Y.
James Burt Jones, Jr.	Batavia, N. Y.
John Newton Jones	New York, N. Y.
John Robert Jones	Plymouth
Joseph Laurence Jones, *m*	Kansas City, Mo.
Kenneth Paul Jones	Pitcairn, Pa.
Laura Josephine Jones	Akron, N. Y.
NaDean Jeanette Jones	Detroit
Winifred Hutchinson Jones	Detroit
Milda Charlotte Josenhaus	Ann Arbor
Louie Joseph	Grayling
Lee Everett Joslyn, Jr., *l*	Detroit
Abel de Juan, *m*	San Juan, P. R.
Lena Elizabeth Judson	Ann Arbor
Frank Albert Jummrick	Chicago, Ill.
Raymond Frederick Kahle	Buffalo, N. Y.
Louis Eli Kamin	Toledo, Ohio
Clyde Walter Kammerer	Saint Louis, Mo.
Max Bruno Kannowski	Alpena

John Robert Kane	Harrisburg, Ill.
Merle Wolf Kann	Kendallville, Ind.
Nathan Edward Kantor	Bayonne, N. J.
Kenyon Wilfer Kantz	Shelby
†Charles Emil Kany, *g*	Dolgeville, N. Y.
John Sylvester Kasberger	Pittsburg, Pa.
Jacob Kassanin	Harbin, China
Sotokichi Katsuizuma	Tsubata, Kaga, Japan
† Samuel Elias Katz, *g*	Ann Arbor
Charles Lott Kaufman, *l*	Bellefontaine, Ohio
Laurie Elinor Kaufman	Flint
Oscar Anshel Kaufman	Detroit
Paul Myron Kaufman	Youngstown, Ohio
Samuel Kaufman	Bellefontaine, Ohio
Basil Lionel Kaufmann	Saint Joseph, Mo.
LeNada Elizabeth Kay	Morocco, Ind.
John Tracy Kaye, *m*	Marquette
Edwin Emerson Keatley	Ann Arbor
†Mabel Alice Kebler, *g*	Washington, D. C.
Robert Andrew Keck	Mount Vernon, Ind.
Hazel May Keedle	Ann Arbor
Margaret Hope Keeler	Concord
Harley Cameron Keen	Charlestown, Ind.
Kemp Horace Keena	Detroit
Harold Winding Kehlet	Ludington
Cameron Dolson Keine	Steelton, Pa.
George Wagoner Keller	Detroit
Paul Little Keller	Hagerstown, Md.
Anita Marie Kelley	Kenwood, N. Y.
Nina Mae Kellogg	South Haven
Charlotte Badger Kelsey	Ann Arbor
Howard Halter Kelsey	Elyria, Ohio
Ruth Cornelia Kelsey	Ann Arbor
Theodore Richard Kelter	Detroit
Elizabeth Maude Kemp	Bad Axe
William Lloyd Kemp	Saint Clair
Paul Reuben Kempf	Ann Arbor
Edward James Kendricks	Alpena
Agnes Elizabeth Kennedy	Grand Ledge
Helen Eugenia Kennedy	Detroit
James Alexander Kennedy, Jr.	Lansing
Samuel Leland Kennedy	Kimbolton, Ohio
Joseph William Kennick	Cleveland, Ohio
Violet Louisa Kepler	Saginaw
Herman Max Kerber	Newark, N. J.
Esther Agatha Kern	Ann Arbor
Lana B. Kern	Marcellus
Edward Oscar Kerolla	Marquette
Mary Margaret Kerr	Bay City
Robert Bass Kerr	Youngstown, Ohio
Robert Milton Kerr	Titusville, Pa.
Robert Morris Kerr	Duluth, Minn.
Susan Irene Kerr	Adrian
Vivienne Marguerite Kerr	Duluth, Minn.
Arthur Peter Kerschen	Marysville, Kans.
Christina Kersey	Muncie, Ind.
Fred Noble Kerwin	Flint
George Isaac Keskey	Wakefield
Gerald Lea Kesler	Detroit
Harry Duncan Ketchum	Detroit
Kenneth Scofield Keyes	Detroit
Vera Kathlyn Keyser	Pontiac
Edna Ruth Kidman	Adrian
Marcus Henderson Kieffer	Englewood, N. J.

Jeannette Maud Kiekintveld	Grand Rapids
Marjorie Kilbury	Bradford, Pa.
Charles Henry Killian	Monticello, Ark.
Eva Katherine Kilpatrick	Ann Arbor
Francis Nelson Kimball	Battle Creek
Harriet Jeannette Kimball	Clinton
Edith Estelle Kimmel	Detroit
Harry Amos Kimmey	Syracuse, N. Y.
†Alan Forrest King, *e*	London, Ont.
Erdmann Wilfred King	Oak Park, Ill.
Frederick Lewis King	Geneva, N. Y.
Harry Gilbert King	Ann Arbor
Marjorie Dorothy King	Escanaba
Paul Zedock King	Ann Arbor
Cecil Arden Kingman, *m*	Forest, Ohio
Rosa Kingsbury	Ann Arbor
Karl Kenneth Kinsey	Lansing
Frances Marie Kinzel	Detroit
Roger Marvin Kinzly	Lockhart, N. Y.
Augustus Kirchner, *m*	Detroit
Josephine Kirk	South Haven
Eugene Dexter Kirkby, *l*	Jackson
Anna Marie Kirkpatrick	Chicago, Ill.
Arthur Loomis Kirkpatrick	Chicago, Ill.
Mitsuji Kiyohara	Hyogo-ken, Japan
Frederick Augustus Klann	Bay City
Pieter John Klaphaak	Ann Arbor
Herbert Gustave Kleekamp	Saginaw
Margaret Elizabeth Benskin Klein	Canton, Ohio
Sidney Klein	Cleveland, Ohio
Donald Ring Klie	Harron, Ont.
Benjamin Moses Aaron Kline	Bayonne, N. J.
Marion Klingler	Pittsburg, Pa.
Vivian Loada Klingler	Chelsea.
Carleen Elizabeth Klocke	Three Rivers
Walter Hugo Kluge	Cape Town, South Africa
James Sybert Klump, *m*	Saginaw
Russell John Knapp	Ida
Blanche Gale Kneeland	Battle Creek
Henry Tracy Kneeland	Saint Louis
Margaret Vriehuis Knevels	Three Rivers
Rufus Hayward Knight	Detroit
Emma Elizabeth Knoepp	Pittsburg, Pa.
Olive Klein Knowlson	Ann Arbor
Clifford Everette Knox	Montrose, S. Dak.
Edward Knuff, *l*	Johnston, Pa.
Kenneth Karl Koch	Traverse City
Edward Clinton Kolb	Haddonfield, N. J.
Veronica Robertson Kollauf	Ann Arbor
Alice Kraft	Cleveland, Ohio
Fritz Heinrich Kranz	East Aurora, N. Y.
Karl Wilhelm Kranz	East Aurora, N. Y.
Bessie Cecelia Krasa	Detroit
Bernard Gustave Krause	Cleveland, Ohio
Raymond Carl Krause	Detroit
Louise Marion Kreger	Wyandotte
George Henry Kretzschmar	Detroit
Otto Theodor Kreuser	Mount Vernon, N. Y.
Edmund Joseph Kricker	Portsmouth, Ohio
Harlan Otto Krieger	Petoskey
Bernice Catherine Krueger	Toledo, Ohio
Helen Louise Krueger	Toledo, Ohio
William Kruger	Newark, N. J.
Donald Francis Kudner, *m*	Lapeer

William Edward Kuechenmeister	Blissfield
Ludwig Ferdinand Kuijala	Hancock
Anna Elizabeth Kunert	Newberry
Leslie William Kunkel	Utica, N. Y.
Leo Kuschinski	Detroit
Milburn John Kusterer	Webb City, Mo.
Charles Albert Kutzleb	Canon City, Colo.
John Henry Labadie	Ottawa, Ohio
Paul Franklin Labadie	Caney, Kans.
Oza Joseph Labarge	Standish
Adrian Lyle LaGrant	Bad Axe
Earl Robert Laidlaw	Oxford
†Winifred Blanche Laing, *g*	Ortonville
Esther Louise Lamb	Flint
Harry Howe Lamb	Butler, Pa.
Scott Edwin Lamb	Imlay City
Zelma Eilene Lamb	Detroit
Charles Frederic Lambert	Detroit
George Washington Lambert	Vermilion, Ohio
Selwyn Arthur Lambert	Bay City
William J. Lambert	Detroit
Roland Vere Lamkin	Good Hart
Roy Douglas Lamond	Chicago, Ill.
Waldo Otmar Lampe	Detroit
Samuel Lamport	Detroit
Vernon Lancaster	Oden
Harold Jackson Lance	Ashtabula, Ohio
Leroy Charles Lancer	Cleveland, Ohio
Edmund Kates Land	Detroit
Albert Ernest Landgrebe	Huntingburg, Ind.
David B. Landis	Goshen, Ind.
Helena Martha Landwehr	Manchester
Blanche Elizabeth Lane	Detroit
John William Langs, *l*	Port Huron
Stephen David Lankester	Grand Rapids
Lawrence [Dominic] Denny Larke, *l*	Rogers
Edwin Skinner Larsen	Detroit
David Larson	Iron Mountain
Leonard Benjamin Larson	Ironwood
Walter John Larson	Ishpeming
George Richard Larwill	Adrian
†Ludwig Beethoven Lasko, *g*	New York, N. Y.
Lillian Phoebe Lassey	Hancock
Della Christine Laubengayer	Ann Arbor
Helen Bond Laufman	Ann Arbor
Ozmun Augustus Laven	South Bend, Ind.
Lucius Frank Laverty	Bay City
Norman Hyman Lavine	Detroit
Donald Leon Lawrence	Brook, Ind.
George Raymond Lawson	Royal Oak
Charles Blackburn Lawton	Lawton
Herbert Franklin Layle	Saint Clair
Esther Irene Layton	Holden, Mo.
Ferne Parsons Layton	New Concord, Ohio
Henry Jackson Leasure	Fostoria, Ohio
Thomas John LeBlanc, *m*	Cheboygan
Emerson John Leddick	Montague
Harold Willetts Lee	Owendale
Rita Mary Lee	Port Huron
William Walter Leek	Soldier, Idaho
Lawrence Christian Leever	Ann Arbor
William Matthias LeFevre	Muskegon
Stanford Leffen	Joplin, Mo.
Serge Harold Leffler	Leipsic, Ohio

Charles William Legeman	Evansville, Ind.
Victor Eldred Legg	Ann Arbor
Albert Thomas Lehman	DeTour
Mildred M. Lehman	Churchville, N. Y.
Eleanor Vandervere Leighton	Walton, N. Y.
William Adolph Leitzinger	Clearfield, Pa.
Florence Keefer Lenfestey	Mount Clemens
Ruth Harriet Lenzner	Detroit
Alice Whitman Leonard	Ann Arbor
George Tod Leonard	Mansfield, Ohio
Marian Josephine Leonard	Ann Arbor
Nellie Brokaw Leonard	Interlaken, N. Y.
Philip Francis Leslie	Toledo, Ohio
R. Harry Leslie, *l*	Ann Arbor
Julian Tully Lett	Marion, Ind.
Irving Jacob Levick	Youngstown, Ohio
Joseph Herman Levin	Sioux City, Iowa
Simon Levin	Detroit
Abe Herman Levine	New Castle, Pa.
Isadore Edward Levine	Michigan City, Ind.
Bessie Rachael Levinson	Birmingham
David Levinson	Birmingham
Frank Kinsey Levinson	Indianapolis, Ind.
Morton Jack Lewin	Denver, Colo.
Howard Brooks Lewis	Duluth, Minn.
Howard Scott Liddell	Erie, Pa.
Harry Liebeskind	Waterbury, Conn.
Lester Roderick Lightfoot	Cloquet, Minn.
Don M. Lillie, *l*	Coopersville
Lee Middleton Limbert	Greenville, Ohio
Nelson Miller Lincoln	Jackson
Florence Lindemann	Philadelphia, Pa.
James Michael Lindemuth	Hicksville, Ohio
Irene Hannah Litchman	Logan, Pa.
Feng Chu Liu	Kirin, China
Lucile Livingston	Detroit
Anna Mary Lloyd	Ann Arbor
Clement Elton Lockwood	Clyde
Ezra William Lockwood	Detroit
Julia Lockwood	Sturgis
Benjamin Austin Loeffel	New Haven, Conn.
William Pierce Loer	Newcastle, Ind.
Freda Bessie Loewenstein	Detroit
Emily Linnard Loman	Philadelphia, Pa.
Joseph Roscoe Long	Steelton, Pa.
Lenore Rishel Long	Jackson
Margaret Ruth Long	Detroit
Perrin Hamilton Long	Bryan, Ohio
*Seymour Quinn Long	Urbana, Ohio
Virginia Stephanie Look	Detroit
Albertine Grace Loomis	Grand Rapids
Robert Charles Loomis	Jefferson, Ohio
George Frederick Lord	Sheridan, Wyo.
Robert Edwin Lorimer	Detroit
Alvin Earl Loucks	Grand Rapids
Edgar Harold Loud	Detroit
Marie John Bernedetta Loughlin	Ann Arbor
Harry Rauch Louis	Cleveland, Ohio
Charlton Gray Louks	Lapeer
William Robertson Loutit	Grand Haven
Katherine Loveland	Saginaw
George Willard Lovell	Climax

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* Died March 23, 1917.

Helen Myra Lowrie	Detroit
Charles Russell Lowstuter	Charleroi, Pa.
Jesse Rex Lowther	Pulman, W. Va.
Ralph Adam Lucke	Carleton
Laura Ludington	Detroit
Louis Emil Luebbers	Emden, Ill.
Howard Mason Lumsden	Virden, Ill.
Laurel Albin Lundquist	Ann Arbor
Richard Foster Lush	Orange, Cal.
William Gale Lush	Galeton, Pa.
Philip Lustig	Cleveland, Ohio
Earl Forest Lutz	Wyandotte
Julio Luzunaris	San Juan, P. R.
Claire Frost Lyman	Jackson
Arthur Jeremiah Lynch	Lapeer
Gladys Lynch	Van Wert, Ohio
St. David Fenimore Lynch	Wayne, Pa.
Edwin Howard Lyon, Jr.	Saint Johns
Frances Mary Lyon	Saint Johns
Frederick Bronson Lyon	Ann Arbor
Helmuth Maag	Tripp, S. Dak.
Hugo George Maas	Indianapolis, Ind.
John Donald Mabley	Detroit
Adaline Laura McAllister	Detroit
Thomas Francis McAllister	Grand Rapids
Charles Veron McAlpine	Basom, N. Y.
Helen Martha McAlpine	Cleveland, Ohio
James Robert McAlpine	South Bend, Ind.
Alva John McAndless	Capac
Helen McAndrew	New York, N. Y.
Lawrence Perry McArthur	Greeley, Colo.
Marie Claire Macaulay	Calumet
Lavinia Gould MacBride	Ann Arbor
Nina Kate McCain	Ann Arbor
Myrtle Mabel McCall	Kronan, Sask.
Harry Brown McCallum	Midland
Robert John McCandliss	Hoihow, Hainan, China
Andrew McCarty	South Haven
Charles Henry McCarty	Lowell
Russell Jay McCaughey	Chicago, Ill.
Howard Atherton McCaughna	Swartz Creek
Earl Hugh McCauley	Detroit
Ethelyn Beryl McClelland	Ann Arbor
James Inglish McClintock	Canon City, Colo.
James Clifton McClure	Alpena
Archibald Irvine McColl	Grand Rapids
Kenneth Sprague McColl	Detroit
Clarissa McCollom	Port Huron
Augustine McCormick	Grand Rapids
Edith Russell McCormick	Glen Ellyn, Ill.
Mary Elizabeth McCormick	Harrisburg, Pa.
James Monroe McCotter	Hartford
Kenneth Alger McCrory	Toledo, Ohio
Ruth Robbins McCrossen	Ann Arbor
Donald Breslin McCruden	Westfield, N. Y.
Chrystal Christopher McCue	Goodells
Ethel Agnes McCrickett	Ypsilanti
Frances Lowelda McCune	Sheffield, Ill.
Robert Bronson McCutcheon	Big Rapids
Robert Lowell McCutcheon	Arcade, N. Y.
James Bryan McDavid	Hillsboro, Ill.
Archie Duncan McDonald	Ormond, Ont.
Awey Elfledda Macdonald	Detroit
Doris Carlyle McDonald	Holly

Elizabeth McDonald	Alpena
Elizabeth Anne McDonald	Detroit
Esther McDonald	Jackson, Ohio
Frances Haun Macdonald	Dollar Bay
Mary McLellan McDonald	Detroit
Robert Talmage McDonald	Norwalk, Ohio
Ursula McDonald	Mount Pleasant
†Craig Alexander McDougall, *e*	Cheboygan
Margaret Helen Mac Dougall	Detroit
Philip Gilbert McDuffie	Jefferson, Iowa
Ronald Allan McEwan	Bay City
Janet Mabel McFarlane	Detroit
John Charles McGaughey	Laurenceville, Ill.
Howard Francis McGlasson	Chicago, Ill.
Elizabeth Marie McGrath	Des Moines, Iowa
Marie Cecelia McGrath	Monroe
Marion MacGregor	Ann Arbor
Helen MacGregory	Cass City
Kenneth Ross McGrew	Lewistown, Ill.
John Conway McGuire	Bear Lake
Anna Miriam McGurk	Newcastle, Pa.
Duncombe Arthur MacInnis	Detroit
Archie Raymond McIsaac	Ludington
Rosswel Alexander McIver	Alpena
Edward Ely Mack	Toledo, Ohio
Emily Magdalene Mack	Ann Arbor
Gordon Charles Mack	Toledo, Ohio
James Weslon Mack	Gary, Ind.
Florella Lowry Mackay	Detroit
Wilfred Cyril McKelvey	Toledo, Ohio
Harold Swift McKennan	Paris, Ill.
Ernest Clifton McKenzie	Ann Arbor
Lucile Isabell McKenzie	Ann Arbor
Marjorie Rosemary McKeown	Detroit
Lloyd Harrison McKim	Cass City
Ruth Katherine Mackin	Omaha, Nebr.
Daniel Heim McKinney	Spokane, Wash.
John McDowell McKinney, Jr., *m*	Washington, D. C.
Grace Jeannette McKinnon	Oxford
Beatrice Eileen McKnight	Detroit
Archibald William MacLachlan	Sault Ste. Marie
Donald Claude MacLachlan	Milan
Donald James McLachlan	Kewadin
Ruth Hadley MacLachlan	Detroit
Weltha A. McLachlan	Evart
June Virginia McLaren	Los Angeles, Cal.
James Alexander McLaughry	Sharon, Pa.
Frieda Marie McLellan	Port Huron
Jean Alexandria Maclennan	Seattle, Wash.
Florence Edith McLouth	Ann Arbor
Olive Annette McLouth	Ann Arbor
Anna Frances MacMahon	Philadelphia, Pa.
Hugh Bradley McMichael	Saint Clair
Hugh Macmillan	Chicago, Ill.
Catherine Moreland MacNaughton	Calumet
Orison Angus MacNaughton	Pierson
Charles Albert McNeil	Lorain, Ohio
George Harry McRae	Pellston
Merle D. Madden	Mason
Frank Thomas Magennis	Akron, Ohio
Theodore William Magnuson	Ishpeming
Bernard Fewell Magruder	Lansing
Harold Makinson	Butte, Mont.
Shirley Margaret Mallette	Detroit

Egon Lothar Paul Mallick	Detroit
Charles Edward Maloney	Arcadia, Wis.
George Washington Manderbach	Reading, Pa.
Harry Alfred Mann	Detroit
John Edwin Mann	Dayton, Ohio
Phyllis Church Mann	Chicago, Ill.
Edith Larzelere Mansell	Mount Pleasant
Roger I. Manwaring	Ann Arbor
Helen Charlotte Caroline Marbach	Cleveland, Ohio
Theodore Harry Marlin	Newcastle, Pa.
William Dennis Marquedant	Rives Junction
Barbara Lee Marquis	Detroit
Vena Ina Marsh	Detroit
Albert Carl Martens	Maywood, Ill.
David Lawrence Martin	Ann Arbor
David Wallace Martin	Charleston, W. Va.
Frank Martin, Jr.	Boise, Idaho
James Charles Joseph Martin	Tonopah, Nev.
Maretta Victoria Martin	Detroit
Roland Roscoe Martin	Green Bay, Wis.
Stephen Martindale, Jr.	LaCrosse, Wis.
Carl Philip Martzloff	Buffalo, N. Y.
William Peter Martzowka	Saginaw
Emma Lydia Marx	Detroit
Fredrick William Marx	Holyoke, Mass.
Marcellus Lee Marx	Detroit
Alfred Mason	Detroit
Bernard Sterling Mason	Saline
Carl Holland Mason	Cranford, N. J.
Doris Gertrude Mason	Ann Arbor
Perry Mason	Charlevoix
Ralph Laurence Mason	Cranford, N. J.
Henry Fowler Massnick	Detroit
James Harold Mathews	Niagara Falls, N. Y.
Lewis Hunt Mattern	Dayton, Ohio
Christian Frederick Matthews	Mount Clemens
Howard Charles Matthews	Northampton, Mass.
Leon LeRoy Matthews	Marcellus
Robert Foster Matthews	Shelbyville, Ky.
Alvin Darwin Maulbetsch	Ypsilanti
Ernst Leick Maurer	Cleveland, Ohio
Lois Ethelyn May	Stockbridge
Angelo Harry Maybaum	Detroit
Thomas Robert Maynard	Grand Rapids
Jason Bidwell Meads	Tecumseh
Elizabeth Celestia Mechem	Battle Creek
Harriet Rosa Medes	Grand Rapids
Thomas Pope Mehlhop	Chicago, Ill.
Isadore Jack Mehlman, *m*	Toledo, Ohio
Florence Louise Melcher	Peru, Ind.
George Raphael Melitz	Iron Mountain
Joseph David Menchhofer	Coldwater, Ohio
Albert Douglas Menut	Newberryport, Mass.
Anna Belle Mercer	Weston, Ohio
Roland Frederick Merner	Cedar Falls, Iowa
Robert Bryan Merrifield	Watervliet
Lionel Newkirk Merrill	Saginaw
Frances Henrietta Merriman	Los Angeles, Cal.
Ruth Merriman	Napoleon
Mary Lucille Merritt	Randolph, N. Y.
Daniel Kingston Messner	Oxford, Ind.
Jessie Lovering Metcalf	Detroit
Howard Bennett Mettel	Connersville, Ind.
Anna Irene Meyer	South Bend, Ind.

Relmond Dail Meyers	Edon, Ohio
Solomon George Meyers	Detroit
Samuel Melvin Michener	Pigeon
Mildred Currey Mighell	Aurora, Ill.
Bruce Irwin Millar	Manistique
Laura Belle Millar	Utica
Albert Delmar Miller	Pomeroy, Ohio
Amelia Carolyn Miller	Saint Johns
Anna Miller	East Orange, N. J.
Cecil Walker Miller	Sullivan, Ill.
Frank Kirkpatrick Miller	New Richmond, Ind.
Galen E. Miller	Twelve Mile, Ind.
Gardner Searles Miller	Ypsilanti
Hazen Lawrence Miller, *m*	Highland Park
Helen Louise Miller	Buffalo, N. Y.
Helen Mildred Miller	Ann Arbor
Margaret Augusta Miller, *m*	Stevensville, N. Y.
Margaret Emily Miller	Bay City
Maurice Clark Miller, *m*	Bay City
Norman Fritz Miller, *m*	Iron Mountain
Sylvester Ganger Miller	Cleveland, Ohio
William Thomas Miller	Detroit
Kirk Radcliffe Millhoff	Cleveland, Ohio
Clinton Cromwell Mills	Ann Arbor
Harold Americus Mills	Rochester, N. Y.
Walker Hill Mills	Decatur, Ill.
Howard William Minchin	Rochester, N. Y.
David Barney Mindlin	Kansas City, Mo.
Ida Esther Mines	Fall River, Mass.
Gordon Richmond Myrick	Rochester, N. Y.
Clark Russell Missimore	Hillsboro, Ill.
Howard Edwin Mitchell	Houghton
May Vivian Mitchell	Ann Arbor
Johanna Martha Moderow	Reese
Henry Moes, *m*	Zeeland
Florence Elizabeth Mohr	Pekin, Ill.
Mauritz Algot Molin	Pittsburg, Pa.
Carl Spencer Molitor	Lansing
Edward Lawrence Maloney	Cheboygan
Robert Thornhill Monroe	Detroit
Lawrence Edwin Montigel	Ann Arbor
Mina Wilhelmina Montigel	Ann Arbor
John Bird Moody	Detroit
John Adam Mooney	Curllsville, Pa.
Evelyn Winifred Moore	Coldwater
Paul McNary Moore, Jr.	Earlington, Ky.
William Arthur Moore	South Bend, Ind.
Lola Fae Moorman	Muskegon
Frank Todd Moran	Ypsilanti
Jamie Elizabeth Morgan	Asheville, N. C.
Lester Harold Morgan	Freedom, N. Y.
Samuel Charles Morris	Three Oaks
Chester Cole Morrison	Pittsburg, Pa.
Raymond Lewis Morrison	Buffalo, N. Y.
Mary Louise Morse	Ann Arbor
Mildred Meredith Morse	Ann Arbor
Virginia Beatrice Morse	Detroit
Oliver Harrison Morton	Detroit
John Alroy Mosenfelder	Davenport, Iowa
Grace Moses	Ann Arbor
Howard Davega Moses	Ann Arbor
Leon Hammerschlag Moses	Marcellus
Marion Lee Moses	Ann Arbor
Minnie Belle Moses	Houghton, N. Y.

†De Thurston Mosier, *l*	Muskogee, Okla.
Frederick Elliot Motley	Virden, Ill.
†Cyril Harold Motulsky, *l*	Dubuque, Iowa
Vivion Kemper Mouser	Big Stone Gap, Va.
Fred Carlisle Moyer	Niagara Falls, N. Y.
Edward George Mraz	Chicago, Ill.
Robert Latorer Muckley	Kansas City, Mo.
Faith Clare Mullett	Ann Arbor
Irving Macaulay Mumford	Howard, S. Dak.
James Francis Mummery	Ann Arbor
Frank Elbert Murdock	Cordell, Okla.
Laura Mary Murdock	Ann Arbor
†George Ignatius Murphy, *l*	Harbor Beach
Joseph Murphy	Greenville, Ohio
Richard Edmund Murphy	Chicago, Ill.
Waldo Jay Murphy	Cadillac
Arthur Lawrence Murray	New London, Conn.
Leo William Murray	Montague
Robert Duand Murray	Charlotte
Eugene Carroll Musgrave	Norway
Roy Leslie Muskatt	Ontonagon
Gladys Elida Musselwhite	Grand Rapids
Julia Blanch Musson	Ann Arbor
Russell Lowell Mustard	Midland
Harrie Edward Mutchler	Caledonia
John Harley Mutchler	Paw Paw
Howard Gray Muzzy	Detroit
George William Myers	Columbia City, Ind.
Laura Mabelle Myers	Omaha, Nebr.
Nona Gladys Myers	Vulcan
Loraine Olive Myll	Mount Clemens
Joseph Dainz Naftel	Cleveland, Ohio
Isabel Bender Nairn	Detroit
Gentok Nakai, *m*	Osaka, Japan
Willis Dean Nance, *l*	Chicago, Ill.
David Droege Nash	Dunkirk, N. Y.
Marco Wassileff Nasteff	Sophia, Bulgaria
Marjorie Eleanor Needham	Ishpeming
Amy Laura Nelson	Omaha, Nebr.
Elna Harrison Nelson	Dyberry, Pa.
Eva Therese Nelson	Omaha, Nebr.
Norman Carl Nelson	Manistee
Patrick Stuart Nertney	Ottawa, Ill.
Frank Ford Nesbit, *l*	Washington, D. C.
Alfred Nesler, *m*	Dubuque, Iowa
Clarence Edward Netting	Detroit
Carl William Neumann	Detroit
Wilfred Nevue	Champion
Marie Amna Newberry	Dundee
†Francis Deming Newbrook, *g*	Buffalo, N. Y.
Cyrenius Adelbert Newcomb, 3d	Detroit
Frank Conklin Newell	Detroit
Roy Ritter Newell	Minden, Nebr.
Maynard Newman	Bisbee, Ariz.
Ray Eugene Newton	Jackson
Marian Louise Nichols	Grand Rapids
John Henry Nichols	Chicago, Ill.
Howard Peekham Nicholson	Syracuse, N. Y.
Hope Hewitt Nichoson, *m*	Luther
Walter Albert Niemann	Hermansville
William Karl Niemann	Hermansville
Leonard William Nieter	New Bremen, Ohio
Violet Marion Nimmo	Detroit
William Edwin Niness	Ironwood

Rachel Helen Nipps	Washington, D. C.
George Nobil	Akron, Ohio
George Beresen Nobil	Sandusky, Ohio
Anna Lucile Noble	Brown City
Rozella Ethel Noble	Boise, Idaho
†Simon Thomas Norlock, *e*	Cadillac
Earl Maydwell Norris *Phar. D., George Washington University.*	Catonsville, Md.
Everett David Norris	Kankakee, Ill.
Dorena Elizabeth Norton	Detroit
Ellsworth Clare Norton	Charlotte
Emma Marie Norton	Little Valley, N. Y.
Katherine Elizabeth Norton	Ann Arbor
Marguerite Estelle Norton	Ann Arbor
Ruth Geraldine Norton	Ann Arbor
Merrill Donald Noss	Three Rivers
Elsie Lois Backus Novy, *m*	Ann Arbor
Frank Orel Novy, *m*	Ann Arbor
Marguerite Felice Novy	Ann Arbor
Clement Nowicki	Nanticoke, Pa.
Hilton Montell Nowlen	Benton Harbor
Gerald Frank Nye	Plainview, Nebr.
Elizabeth Buchanan Oakes	Wellsburg, W. Va.
Irene Maude Oakes	Mio
Mary Esther Oakes	Glen Ridge, N. J.
Reece Brognard Oberteuffer	Detroit
Harold Edmund O'Brien	Oak Park, Ill.
Dorothy Geraldine O'Connor	Detroit
Lyman Warren Oehring	Detroit
Lewis Grant Ogden	Pontiac
Thomas Blackburn Oglethorpe	Manistee
Harry Edward Ogooshevitz	Detroit
John Francis O'Hare	Shenandoah, Pa.
Albert Philip Ohlmacher, Jr.	Detroit
†George Lewis Ohrstrom, *l*	Tacoma, Wash.
William Callam O'Keefe	Saginaw
Genevieve Elizabeth O'Leary	Ann Arbor
Frank Ira Olmstead	Ann Arbor
Hannah Helen Elizabeth Olson	Ann Arbor
Ida Elvira Olson	Cadillac
Stanley Gustave Olson	Ironwood
Jacob Olthoff	Grand Rapids
Walter Anthony Onorato	Youngstown, Ohio
Earl John Opal	Hubbell
Kurt Peters Oppermann	Saginaw
Perry Edward Ort	Churubusco, Ind.
Arthur Irving Ortenburger	Detroit
Edith Baker Orton	Chicago, Ill.
Florence Bell Orwig	Toledo, Ohio
Helen Osband	Detroit
George Edward Osborne	Bolivar, N. Y.
Percy James Osborne	Holland
Henry Neild Osburn	Alton, Ill.
Guyor Wilner Osgood	Adrian
Olive May Osgood	Royal Oak
Charles R. Osius, Jr.	Port Huron
Eugene Adolph Osius	Detroit
Dora Caroline Osterberg	Cadillac
Lewis Nathan Osterman	Toledo, Ohio
Herbert Comstock Otis	Chicago, Ill.
Menno Otterbein	Vestaburg
Lillian Ida Ottmer	Ann Arbor
Kathryn Paulina Overman	Danville, Ill.
Mary Elizabeth Overman	Danville, Ill.

Gerald Parker Overton	Martinsville, Ind.
George Francis Owen	Detroit
Philip Clarkson Pack	Ann Arbor
Genevieve Ida Packard	Mankato, Minn.
Florence Belle Paddack	Detroit
Varn D. Paddock	Bangor
Clarence Edward Page	Ann Arbor
Edgar Russel Paige, *l*	Deckerville
Milburn Ravenshaw Palin	Grand Rapids
Zilpha Roberta Pallister	Detroit
Joseph Palma, *m*	Lafayette, Ind.
Edwin Barbour Palmer	Detroit
Frank William Palmer, Jr.	Saint Louis, Mo.
George Culver Palmer	Ann Arbor
Hayden Palmer	Detroit
Chester Armstrong Palmerlee	Ann Arbor
Faith Elizabeth Palmerlee	Ann Arbor
Earl Edward Pardee	Akron, Ohio
Carl Emanuel Pardon	Ann Arbor
Morris Paris	Brooklyn, N. Y.
Felice Gray Parker	Owosso
Georgina Marion Parker	Concord
Helen Lydia Parker	Ann Arbor
John Curtis Bundy Parker	Evanston, Ill.
Lee Norton Parker	Cleveland, Ohio
Leonard Boutelle Parker	Cleveland, Ohio
Lois Vivian Parker	Howell
Sterling Sheldon Parks, Jr.	Cleveland, Ohio
Vernon Henry Parks	Ann Arbor
Warren Crippen Parmenter	Lima, Ohio
Kenneth Edward Parry	Port Huron
Willard Sigsbee Parson	Ambridge, Pa.
Inez Adell Parsons	Dunkirk, N. Y.
Herbert Parzen	Detroit
Elizabeth Patchin	Traverse City
Dorothy Elizabeth Paton	Ann Arbor
Carleton George Patterson	Pontiac
Clarence Knox Patterson, *l*	Pontiac
Howard Fenno Patterson	Saginaw
Mae Magdalene Patterson	Cleveland, Ohio
Robert Chase Patterson	Portland, Me.
Ernest Frank Montrose Patton	Slippery Rock, Pa.
Elsie Marie Paul	Fort Wayne, Ind.
Louella Bertha Paul	Fort Wayne, Ind.
Marion Ardath Paul	Thompsonville
Marie Seville Paulus	Detroit
Harold Joseph Payette	Bedford
Jay Howard Payne, Jr.	Sandusky, Ohio
Walter Ross Payne	Saginaw
Willard Levi Peach	Fremont, Ohio
†Chester Crawford Pearce, *e*	Marquette
Jacob Pearlsteen	Detroit
Gordon Buell Pearson	Swea City, Iowa
Thomas William Peck	Ann Arbor
Thomas Arthur Peebles	Lorain, Ohio
Margaret Alice Peets	Grosse Pointe Farms
Thomas Reardon Peirsol	Ann Arbor
Howard Bolton Pelham	Jackson
William Fernley Pellow	Ironwood
David Cleo Pence	Blissfield
Ferdinand Warsawjaumnni Penn	Pittsburg, Pa.
Bruner Rice Penniman	Dallas, Texas
Harry Penniman, Jr.	Dallas, Texas
Clarence Theodore Pennoyer	Ann Arbor

Freda Mae Penoyar	South Haven
Laura Alice Peocock	Detroit
Blanche Emma Pepple	Grand Rapids
William Henry Perine	Ann Arbor
Ardelle Freda Perkins	Ann Arbor
John Stephenson Perrin	Escanaba
Wayne August Perrot	Chesaning
James Edward Perry	Ann Arbor
Kenneth Joseph Perry	Escanaba
Olga Christine Perschbacher	Grand Rapids
Walter Franklin Perschbacher	Grand Rapids
Arthur Pertzovitz	Newark, N. J.
Ferdinand Paul Petermann, *l*	Laurium
Moses Richelieu Franklin Peters	Ann Arbor
David Leonard Peterson	Cadillac
Henrietta Peterson	Ishpeming
Ward Davis Peterson	Ann Arbor
Howard Marshall Petrie	Cadillac
Elmore Shaw Pettyjohn	Detroit
Mary Elizabeth Pfeiffer	Corning, N. Y.
Roderick Dhu Pfohl	Niagara Falls, N. Y.
Clara Marie Phelps	Kalkaska
Goddie Frederick Philipp, Jr.	Kalamazoo
Norman Edmund Philleo	Mason
Floyd Tifford Phillips	Green Bay, Wis.
Martin Phillips	Cleveland, Ohio
Otto William Phillips	Ionia
Maurice Clark Piatt	Lansing
†Artemas Gray Pickard, *e*	Fort Wayne, Ind.
Royce McPherson Pickett	Clyde, Ohio
Dorothy Elizabeth Pierce	Ann Arbor
James Mortimer Pierce	Sanborn, N. Y.
Virginia Pierce	Lansing
Carol Churchill Pierson	Flint
Donald Earl Pilkinton	Belding
Marcia Laurason Pinkerton	Detroit
Esther Pinkham	Belding
Marie Pinney	Ann Arbor
Albert Pitts	Ann Arbor
Genette Pixley	Saint Joseph
Joseph Wilmer Planck	Union
Hazel Katherin Platt	Carthage, Mo.
William Leroy Plummer	Los Angeles, Cal.
Richard Otto Poch	Rogers
Jan Podolski	Detroit
Antrynetta Poel	Grand Rapids
Gladys Collins Pollock	Charlotte
James Kerr Pollock, Jr.	Newcastle, Pa.
Lisle Leo Pollock, *l*	Decatur
†Isadore Harris Polozker, *l*	Detroit
Stuart David Pontius	Circleville, Ohio
†Samuel Popkins, *ea*	Detroit
Herbert Leslie Popp	Fort Wayne, Ind.
Cecil Gordon Porter	Rockford
Doris Eunice Porter	Lansing
Mary N. Porter	Mackinaw, Ill.
John Coatsworth Post	Holland
Charles Coleman Potter	Kalamazoo
Mildred Doreen Potter	Hastings
James Pottinger	Detroit
Ella Maxine Powell	Ann Arbor
Emily Powell	Marion, Ind.
Eva Powell	Ann Arbor
Leroy Deforrest Powell	Grand Rapids

Percy John Power	Farmington
Ethel Mary Powers	Grand Rapids
Lewis Harrison Powrie	Detroit
Meta Katherine Prange	Grand Rapids
Helen Irene Pratt	Chelsea
Phillips Brooks Preston	Ionia
Florence Marie Price	Cleveland, Ohio
Joseph St. Clair Price	Atlantic City, N. J.
Leda Lucile Prichard	Ashland, Ky.
Pearl Octavia Primeau	Northport
Waldo Wiggins Prince	Rome, N. Y
Dorothy Louise Probst	Detroit
Hugo Vit Prucha	Cleveland, Ohio
Frank Anderson Puddefoot	Detroit
Joseph Raymond Pugh, *m*	Ann Arbor
Dayton Turner Pulford	Toledo, Ohio
Everett William Pulling	Windsor, Ont.
Glenn Elmer Pulver	Mendon
Francis Lewis Purcell	Iron River
Fred Leach Puvogel	Royal Oak
Arthur Leigh Quackenbush	Rome, N. Y.
Percy James Quakenbush	Perth Amboy, N. J.
Lucile Harrison Quarry	Ann Arbor
Paul Thomas Quarry	Ann Arbor
Valora Frances Quinlan	Grand Rapids
William Anthony Quinlan	McCarron
Sara Grace Rabinowitz	Eveleth, Minn.
David Racoosin	Detroit
Angela Philomene Rademacher	Detroit
Katherine Augusta Rader	McComb, Ohio
Hertha Emma Raid	Cleveland, Ohio
Ross Dorrance Rainsburg	Kansas City, Mo.
Clare Ralya	Grand Haven
Morgan Ramsay	Bay City
Hellen Elizabeth Ramsdell	Manistee
Lewis Stephen Ramsdell	Ann Arbor
Frank LeRoy Rand	Ann Arbor
Franklin Peleg Randall, *l*	Fort Wayne, Ind.
Josephine H. Randall	Ann Arbor
Henry Joseph Ranft	Cleveland, Ohio
Henry King Ransom	Jackson
Benjamin Rapport	Pittsburg, Pa.
Lake Erie Rariden	Delphi, Ind.
Carl James Rash	Ann Arbor
Clarence Lafayette Rasmussen	Lewistown, Ill.
Ella Rasmussen	Detroit
Alfred Day Rathborn, 4th	Grand Rapids
Roscoe Russell Rau	Monroe
Elbie Cloe Ray	Indiana, Pa.
Ella Gibson Ray	Detroit
Leonard Leo Raymour	Benton Harbor
Grace Wayne Raynsford	Highland Park
Dorothy Doan Reade	Escanaba
Helen Frances Reade	Escanaba
Martha Marie Reardon	Midland
Richey Blendon Reavill	Douglas, Wyo.
Thelma Atherton Rebstock	Crystal Beach, Ont.
Harry Hurst Redfearn	Oak Park, Ill.
Edna May Reed	Flint
Ernest Reed	Lansing
Hester McNeal Reed	Ann Arbor
Hugh Donald Reed	Ann Arbor
Myrtle Rowena Reed	Ann Arbor
James Dryden Reeder	Ann Arbor

Sherwood Reekie	Detroit
Guy Alden Reem	Benzonia
Dorothy Virginia Reese	Detroit
Harold McBain Reeves	Detroit
Agnes Cecilia Regan	Ann Arbor
Albert Emanuel Reichert	Ann Arbor
Helen Hannah Reichert	Ann Arbor
Fred Townsend Reid	Royal Oak
Jasper Braley Reid	Detroit
Francis DeTar Reider	Long Beach, Cal.
Leon Jonathan Reigelman	Greenville, Pa.
James Joseph Reilly	Detroit
John Randolph Reilly	Ann Arbor
Edgar George Reindel	Detroit
Mildred Margaret Reindel	Detroit
Raymond Frederick Reitter	Saginaw
Katharine Sherrill Remington	Grand Rapids
Aimee Geraldine Renkes	Hastings
Albert Russel Renwick	Calumet
Julia Renwick	Grand Rapids
Monroe Repke	Sturgis
Erwin Andrew Reule	Ann Arbor
Olga Cathyrine Reutter	Lansing
†Margaret Ruth Reynolds, *g*	Ann Arbor
Margery Eleanor Reynolds	Hastings
Stanley Burnett Reynolds	Benton Harbor
Edgar Lee Rice	Massillon, Ohio
Leone W. Richards	Wolverine
Donald Colin Richardson	Vicksburg
Lee King Richardson	Alpena
Phyllis Mary Richardson	New Rochelle, N. Y.
Robert Burns Richardson	Buffalo Hart, Ill.
Helen Marie Richey	Greensburg, Ind.
James Paul Richmond	Ann Arbor
Lavanche Genevieve Rieger	Ann Arbor
Walter Sylvan Riess	Toledo, Ohio
Aaron Dudley Riker	Pontiac
Clarence Julian Riley	Townsend, Mont.
Frank John Riley	Blissfield
James Allen Rings	West Unity, Ohio
Vincent Harrington Riorden	Niagara Falls, N. Y.
Maurice Louis Ripps	Bayonne, N. J.
Marguerite Lucinda Risedorph	Grand Rapids
Samuel Doty Risley	Sandusky, Ohio
John Clapp Robbins	Cleveland, Ohio
Walter Carl Roberts	Ann Arbor
Benjamin Lawrence Robertson	Monroeville, Ohio
James William Robertson	Sault Ste. Marie
†Thomas Brackett Robertson, *e*	Chevy Chase, Md.
Walter Kempster Robertson	River Forest, Ill.
Joseph Edwin Robins	Charleston, W. Va.
Bertha Mollie Robinson	Detroit
Esther Hilda Robinson	Detroit
Frederic Lawrence Robinson	Lima, Ohio
Irma Natalie Robinson	Grand Rapids
John Ellsworth Robinson	Sandusky, Ohio
Simpson Clarke Robinson	Detroit
Viola Belle Robinson	Detroit
Helen Grace Robson	Detroit
Ruth Marion Robson	Jackson
Charles Frederic Roche, *m*	Bay City
Donald Carmer Rockwell, *m*	Kalamazoo
Norman Carvel Roegner	Troy
Harold Rich Roehm	Detroit

Winifred Ida Roehm	Detroit
Clarence Louis Roeser	Saginaw
Herbert Ewing Roether	Perrysburg, Ohio
Harold Francis Rogers	Detroit
Randolph Rogers	Grand Rapids
Harold Parker Rohde	Sioux Falls, S. Dak.
James Alfred Rolls	Santa Fe, N. Mex.
DeForest Sisler Rood	Akron, Ohio
Marion Bell Rood	Ann Arbor
Owen Abram Rood	North Branch
George Harrington Roos	Wellsville, N. Y.
Marvin Horton Rorick	Toledo, Ohio
Ernest Lafayette Roscoe	Lansing
Grace Alice Rose	Saint Joseph
Margaret Lucille Rose	Dexter
Leo Samuel Rosen	Muskegon
Louis Lieber Rosenberg, *m*	Toledo, Ohio
Josephine Rosenblum	Gladstone
Lee Michael Rosenbluth	New York, N. Y.
Joseph Ehrlich Rosenfeld	Battle Creek
Harold Wallace Rosenheim	Detroit
Bernard Rosenthal	Detroit
Florence Rachel Rosenthal	Petoskey
Hilliard Edward Rosenthal	Syracuse, N. Y.
Samuel Robert Rosenthal	Manistique
Mary Elizabeth Rosevelt	Decatur
Cecil Alured Ross	Kalamazoo
Francis Ellsworth Ross	Manistee
Henry Glenn Ross	Mansfield, Ill.
LaVern Ross	Ypsilanti
Paul Rostov	Lafayette, Ind.
Glenwood Washington Rouse	Kent, Ohio
Floyd Arthur Rowe, B.S. (Mar. E.)	Ann Arbor
Floyd Duane Rowe	Chelsea
Genevieve Gladys Rowe	Calumet
Helene Martina Rowe	Orbisonia, Pa.
Henrietta Agnes Rowe	Houghton
Charles Reed Rowley	Norwalk, Ohio
Frank Smithies Rowley	Wausau, Wis.
Virgil Albert Rowley	Lorain, Ohio
Edward James Roxbury	Detroit
Arthur Flinn Royon	Houston, Ohio
Leah Ocker Roys	Moorepark
Hazel Merryl Rubert	Howell
Mary Elizabeth Rubert	Howell
George Clyde Ruble	Wagoner, Okla.
William Kent Ruble	Wagoner, Okla.
Turner McKinley Rudesill, *l*	Rapid City, S. Dak.
Albert Darwin Ruedemann	Albany, N. Y.
Max Layton Rumbold	Flint
Marie Sabine Rummel	Laporte, Ind.
Russell Alexander Runyan	Harbor Springs
Lyman George Rupp	Elliston, Ohio
Gail Edward Rush	South Bend, Ind.
Edwin Phillips Russell	Mount Morris
Frances Irene Russell	Ann Arbor
Gaylord Otis Russell	Petersburg
Jerome William Russell	Ishpeming
Selma Viola Russell	Pekin, Ill.
†Lawrence Magnus Rutz, *p*	Detroit
Edward Evan Ruzicka	Chicago, Ill.
John Francis Ryan	Shoshone, Idaho
Thomas Milton Rybolt	Indianapolis, Ind.
Ralph Orlando Ryschener	Archbold, Ohio

Edward Arthur Sachs	Holyoke, Mass.
Lena Margaret Sackett	Charlotte
Kameyo Sadakata	Okayama, Japan
Caroline Marian Sadtler	Germantown, Pa.
Emil Safarik	Chicago, Ill.
Hetor Joseph St. Amour	Cheboygan
Raymond Kenneth St. Clair	Saint Joseph
Carter Sales	Detroit
Nina Valene Salisbury	Paw Paw
Norman Sherman Sallwasser	LaPorte, Ind.
Edward Bernard Salzberg	Michigan City, Ind.
Dorothy Cornelia Sample	Walkerville, Ont.
Mabel Sanborn	Saginaw
Louis Sandy Sanders	Cleveland, Ohio
May Sanders	Salt Lake City, Utah
William Phillips Sandford	Kewanee, Ill.
David Jacob Sandweiss	Detroit
Timoteo Sapia	Ponce, P. R.
James Wirth Sargent, *l*	Wichita, Kans.
Sheldon John Sauer	Plano, Ill.
Herman Jack Saulson	Munising
Harold Jennings Saunders	Belfast, N. Y.
Jessie Louise Saunders	Detroit
Marian Elizabeth Saunders	Charlevoix
Albert Ernest Sawyer	Saint Matthews, Ky.
Guy Edmund Sawyer	South Haven
Robert Barckley Sawyer	Ithaca, N. Y.
Thomas Scott Saylor	Saginaw
Hester Gertrude Schaberg	Saginaw
Benjamin Joseph Scheinman	Detroit
James Schermerhorn, Jr.	Detroit
Robert Max Schiller	Chicago, Ill.
Mildred Stockton Schilling	Nashville
†Herbert Eugene Schimmel, *e*	Faribault, Minn.
†Herbert Judson Schlee, *e*	Ann Arbor
Paul John Schlesinger	Ann Arbor
Prescott Golder Schlotterbeck	Ann Arbor
Alfred William Schluchter	Pigeon
Mary Frances Schmalfuss	Detroit
Fred Victor Schnid	Ann Arbor
Bertram David Schmidt	Detroit
Doris Theodotia Schmidt	Chelsea
Rinehard Robert Schmidt	Howard City
Carl German Schmiedeskamp	Quincy, Ill.
Walter Eberhart Schmitt	Toledo, Ohio
Carlton Louis Schmok	East Cleveland, Ohio
Dwight Cowan Schmook	Springfield, Mo.
Margaret Sena Schmutz	Ann Arbor
Lawrence Bassett Schneider	Fort Wayne, Ind.
Marguerite Schneider	Saint Joseph
Samuel Mayer Schnitz	Benton Harbor
Frieda Nina Schoettle	Ann Arbor
Albert Augustus Scholl	Newport, Ky.
Evelyn Harwood Scholl	Ann Arbor
Hazen Clarence Schouman	Saint Clair
Woldemar Fredrick Schreiber	Grand Rapids
Mathilda Marie Schroeder	Bay City
Luella Melvina Schroen	Ann Arbor
Leah Marie Schueren	Detroit
Vera Esther Schuknecht	Detroit
Carl Henry Schulte, A.B. *University of Detroit.*	Detroit
Evelyn Josephine Schulte	Hancock
Ida Marion Schulte	Hancock

Ewald George Willie Schulz	Menominee
Earle Edward Schumacher	Chelsea
George August Schumacher	Albion
George Arthur Robert Schuster	Saint Louis
†Claude William Schutter, *g*	Ann Arbor
Morrison Webster Scofield	Sterling, Colo.
Hilda Gentian Scothan	Otisville
Erman Orchard Scott	Ann Arbor
Laura Stella Scott	Rapid River
Leman Haywood Scott	Wyoming, Ill.
Marion Lind Scott	Ann Arbor
Minard Amos Scott	Saint Joseph
Henry Clay Scovel, Jr.	Detroit
Chancy Sabine Seabrook	Dayton, Ohio.
Harold Ernest Sigfrid Seaburg	New Britain, Conn.
Charles Fremont Sears, Jr.	Rockford
Dorothy Lapham Sears	Rockford
George Donald Seckinger	Jackson
Charles Alberta Sedgman	Rockford
Sherwold Wyant Sedgwick	Catskill, N. Y.
Frances Lucile Seeley	Ann Arbor
Helen Seeley	Caro
Cecil Julian Seely	Ann Arbor
Betty Eggleston Seelye	New York, N. Y.
Edward Rohn Seese	Grand Forks, N. Dak.
†William Herman Seff, *e*	Newark, N. J.
†Gertrude Seifert, *g*	San Diego, Cal.
Hazel Swinburne Selby	Cincinnati, Ohio
Herbert Gates Selby	Spokane, Wash.
Cloyd Vernon Sellers	Bartlesville, Okla.
Lawrence Howard Seltzer	Detroit
Amy Gertrude Sergeant	Battle Creek
Robert McGill Settle	Covington, Ky.
Bert Vernon Severance	Willsboro, N. Y.
Raymon William Severance	Willsboro, N. Y.
Katherine Louise Seyler	Ann Arbor
Gertrude Marie Seymour	Manistee
William Russell Seymour	Ypsilanti
Frederick Webber Shafer	Ann Arbor
Noel Franklin Shambaugh	Kokomo, Ind.
Willard Robertson Shambaugh	Fort Wayne, Ind.
David Woolverton Shand	Springfield, Ill.
John Parks Shand	Ishpeming
Harold Marion Shapero	Detroit
Jacob Theodore Shapira	Pittsburg, Pa.
Leslie Thomas Shapton	Charlevoix
Owen Thomas Sharkey	Johnstown, Pa.
Alton Byron Sharp	Beulah
John Sharp	Detroit
Marion Helen Sharpe	Toledo, Ohio
Eva Sharrow	Grand Rapids
Eleanor Yorke Shartel	Neosho, Mo.
Stratton Shartel	Neosho, Mo.
Helen Alliene Shaw	Birmingham
Alfred Marston Shearer	Bay City
Everett Louis Sheldon	Mount Clemens
Maurice Gerald Sheldon	Olean, N. Y.
Olive Belle Sheldon	Ann Arbor
Suel Andrews Sheldon	Grand Rapids
Reuben Wilson Shelley, *m*	Newfane, N. Y.
Malcolm Edgar Sheltraw	Saginaw
Helen Grace Shepard	Omaha, Nebr.
Harley Bakwel Sherman	Geneva, N. Y.
Harold John Sherman	Toledo, Ohio

L. Celeste Sherman	Ann Arbor
James Seberon Shields	Detroit
Olga Emeline Shinkman	Grand Rapids
Paul Alfred Shinkman	Grand Rapids
Edmund Leo Schinnick	Kewaunee, Wis.
Sidney Jerome Shipman, *m*	Ann Arbor
Homer Jefferson Shivell	Marshall
Benjamin Shlain	Detroit
Allen Shoenfield	Louisville, Ky.
Anna Susan Shubitowski	Harbor Beach
Mina Alice Sievert	Saint Johns
Hollis LaMoyne Sigler	Pinckney
Chase Baromeo Sikes	Detroit
Joseph Edward Simmons	Frankfort
Victor H. Simmons	Hartford City, Ind.
Florence Naoma Simons	Houghton
Henry Calvert Simons, Jr.	Virden, Ill.
Jess Ray Simpson	Ann Arbor
Walter Malcolm Simpson	Lynn, Mass.
Durward Wilbur Sisson	Brockton, Mass.
Stanley Edwin Sithe	Detroit
Severin Frank Skarbinski	McKeesport, Pa.
John Arthur Skoog	Kane, Pa.
Herva Madeleine Slaght	Grand Blanc
Raymond Nelson Slate	Colfax, Wash.
Ellis Dwinnell Slater	Chicago, Ill.
Warren Clyde Slater	Clayton
Samuel Jacob Slavens, *l*	Oak Hill, Ohio
†Chester Baker Slawson, *e*	Greenville
Warren George Slawson	Greenville
Leo William Slazinski	Bay City
Charles Matthias Sleder	Traverse City
Philip Slomovitz	Bayonne, N. J.
Herbert Rood Slusser	Wheaton, Ill.
Carlton Fessenden Small, *l*	New London, Conn.
Marland Blick Small	Benton Harbor
Melbourne Fisher Smallpage	Eagle Grove, Iowa
Ruth Esther Smit	Grand Rapids
†Anna Amelia Smith, *p*	Greenwood, N. Y.
Beatrice Ella Smith	Detroit
Beulah Smith	Washington, D. C.
Cedric Crawford Smith	Bay City
Charles Franklin Smith	Uniontown, Pa.
Charlotte Amelia Smith	Detroit
Clarence Leroy Smith	South Lyon
Clarissa Effie Smith	Salida, Colo.
Delos Grosvenor Smith, *l*	Ionia
Dennis Carl Smith	Russellville, Ind.
Edward Prescott Smith	Marlette
Eva Pearl Smith	Battle Creek
Francis Buchanan Smith	Springfield, Ill.
George Frederick Smith	Columbus, Ohio
Harold Raphael Smith	Detroit
Harold Read Smith	Lapeer
Helen Gertrude Smith	Lockport, N. Y.
Henry Leon Smith	Ashtabula, Ohio
Hugh Cornell Smith	Detroit
James Alec Smith	Muskegon
Katherine Inglis Smith	Ann Arbor
Kenneth Ginn Smith	Salem, Ohio
Merle Eugene Smith	Youngstown, Ohio
Mildred Trabue Smith	Ann Arbor
Paul Ticknor Smith	Lima, Ohio

Raymond Conrad Smith	Detroit
Raymond Vincent Smith	Paxton, Ill.
Read Smith, *l*	Ann Arbor
Stanley Phillips Smith	Detroit
Wallace Julian Smith	Evart
William Axel Smith	Springfield, Ill.
William Parkhurst Smith	Charlotte
George Herbert Snell	Miles City, Mont.
†Walter Lester Snider, *e*	Holyoke, Mass.
John Rowe Snively, Jr.	Lanark, Ill.
Edwin Stahle Snyder	Detroit
Frederick Russel Snyder	Grand Rapids
William Rowland Sobesky	Rapid River
Ray N. Soddy	Calumet
Axel Sigfrid Soderman	Crystal Falls
†Robert Henry Somerville, *l*	Ann Arbor
Stuart LeRoy Sonne	Warren, Pa.
Carl A. Sorling	Moline, Ill.
Samuel Jacob Soschin	Newark, N. J.
Avery Byron Soule	Albion, N. Y.
Orville McKinley Southard	New Paris, Ohio
James Granville Southworth	Monroe
Tracy Waters Southworth	Monroe
Varnum Cochran Southworth	Monroe
Harold Ivan Sparling	Ann Arbor
Errett Ruhl Speer	Toledo, Ohio
Frances Alison Spence	Cass City
Eugene Joseph Spencer, A.B.	Rushton
Mary Helen Spencer	Charlotte
James Eldredge Spier	Mount Clemens
Earl Haas Spiesberger	Bay City
Carlos Augustus Spiess	Las Vegas, N. Mex.
Harold Alfred Spiller	Buffalo, N. Y.
Ethel Attrill Spilsbury	Detroit
Landon Wendell Spore	Minerva, Ohio
Charles Maitland Sporley	Negaunee
Merrill Byron Sprague	Chardon, Ohio
Harvey Conrad Springer	Plymouth
Marjorie Caroline Springer	Port Huron
Nelda Stevenson Springer	Port Huron
Russell Addison Springer	Van Wert, Ohio
Harold Humphreys Springstun	Pana, Ill.
Theodore Louis Squier, *m*	Battle Creek
Jerome Leonard Stadeker	Chicago, Ill.
Anna Catherine Staeb	Ann Arbor
William Milton Stang	Meshoppen, Pa.
Joseph Albert Stanko	Pueblo, Colo.
Lela May Stanley	Cleveland, Ohio
Isadore Stark	Toledo, Ohio
Jessie Armstrong Stark	Ann Arbor
Morris Stark	Toledo, Ohio
Raymond Max Stark	Watertown, Wis.
Walter Ruskin Stark	Saginaw
William Yeats Stearns	Detroit
Justin Bruce Stecker	Detroit
Elma Kathryn Steeb	Ann Arbor
Ethel Irene Steele	Ann Arbor
Zola Steele	Imlay City
Mary Louise Steere	Ann Arbor
Harry Michael Steffey	Ann Arbor
Charles Bryant Stegner	Titusville, Pa.
Eugene Francis Steketee	Grand Rapids
Gertrude Maddern Steketee	Holland
Paul Lauwerse Steketee	Grand Rapids

Ruth Gertrude Stellwagen	Ann Arbor
Harold Christian Stenson	Manistee
Arthur Chapman Stephens	Fort Wayne, Ind.
Earle Nelson Stephens	Detroit
Herman Horace Stephenson	Fredonia, Kans.
Jacob Carnelius Stern	Pittsburg, Pa.
Cash Rinehart Stevens	Edwardsburg
LaVergne Belden Stevens, Jr.	Denver, Colo.
Ellen Burden Stevenson	Ann Arbor
Willard Arthur Stevenson	Rochester, Minn.
Edgar Maurice Steves	Mason
Marion Steward	Washington, D. C.
Jean Vincent Stewart	Medford, Okla.
Robert Crawford Stewart	Roswell, N. Mex.
Franklin Arthur Stiles, *h*	Binghamton, N. Y.
Sara Frances Stiles	Detroit
Clara Adele Stimson	Detroit
Donald Carr Stimson	Eaton Rapids
George Alpheus Stimson	Ashtabula, Ohio
Paul Merl Stimson	Owensboro, Ky.
Clarence George Tobias Stipe	Ann Arbor
Merle Charles Stitt	Brackenridge, Pa.
Neil Wilson Stiver	Walnut, Ill.
Harry Stocker	Detroit
Charles William Stoll	Escanaba
Emil Alfred Stoller, *m*	Bremen, Ind.
Jonathan Beard Stone	Aspen, Colo.
Mildred Marion Stone	Grand Rapids
Ralph Stone, Jr.	Detroit
Wade Walton Stone	Toledo, Ohio.
Ida Eunice Stonecliffe	Coloma
Lawrence Angell Storrer	Ovid
Harold Eberhardt Storz	Royal Oak
Harold Frederick Stotzer	Archbold, Ohio
Jay Stough	Morris, Ill.
Marguerite Kirk Strachan	Detroit
Percival Christian Strauss	Watertown, Wis.
Samuel Bernhardt Strauss	Indianapolis, Ind.
Paul Oliver Strawhecker	Grand Rapids
Amanda Streeper	Wayne, Pa.
†Clarendon Earl Streeter, *g*	Bolivar, N. Y.
Henry David Stricker	Detroit
Christina Ruth Stringer	Detroit
Roy Edwin Stringer	Detroit
Hulda Wilhelmina Stroebel	Sault Ste. Marie
Abraham Kramer Strouse	Columbia City, Ind.
Dwight Samuel Stuart	Chateaugay, N. Y.
Norman Harold Stumpf	Buffalo, N. Y.
†Frederick August Sturm, *e*	Three Oaks
Rose Elisabeth Sturmer	Port Huron
Hubert Brown Sturtevant	Delavan, Wis.
Irma Jane Sturtevant	Delavan, Wis.
Jeannette Sudow	New York, N. Y.
David Israel Sugar	River Rouge
Frederick William Sullivan, Jr.	Battle Creek
James Frederick Sumner	Ann Arbor
Harry Sunley	Detroit
Donald George Sutherland	Muskegon
Frederick Mayhew Sutter	Detroit
Palmer Evans Sutton	Detroit
Bruce Alexander Swaney	Ann Arbor
Harold Theodore Swanson	Falconer, N. Y.
Marguerite Findlay Swanson	Ravenna, Ohio
Carl Beaumont Swart	Detroit

Archie Leroy Swift	Shenandoah, Iowa
Claude Deforest Swift	Ann Arbor
Frances Estella Swift	Sault Ste. Marie
Frank Albion Taber	Grand Ledge
Henry Takacs, *m*	Waterford, Conn.
Cyril Talbot	Evanston, Ill.
Berthel Watterlund Taleen	Highland Park
Ida May Tallmadge	Ann Arbor
Ralph Larve Tallman	Greenville
Bruce Nicholeus Tappan	Port Huron
Elaine Harrison Tappan	Niles
Leonard Anderson Tappe	Cadillac
Frances Jane Tarbell	Benton Harbor
Houghton Wells Taylor	Fort Wayne, Ind.
James Morrison Taylor	Pontiac
Joseph Hume Taylor	Lapeer
Lucille Riviere Taylor	Mount Clemens
Ada Martha Tazelaar	Kalamazoo
Thomas John Teare	Elsie
†Harold Benson Teegarden, *g*	Greenville, Ohio
Kathleen Teer	Jackson
Dorothy Louise Tefft	Detroit
Harold Robert Telfer	Sarnia, Ont.
Oana TenEyck	Kansas City, Mo.
Guy Link Terhune	Niagara Falls, N. Y.
Khatchig Hampar Tertsagian	Detroit
Leonard Francis Thalner, *m*	Ironwood
Marowee Louise Thayer	Northville
George Ralph Thoeming	Chicago Heights, Ill.
Arthur Delong Thomas	Ypsilanti
Beryl Statira Thomas	Sault Ste. Marie
Dorothy Ormond Thomas	Toledo, Ohio
Hugh Roger Thomas	Ann Arbor
Laurence Meyrick Thomas	Ypsilanti
Sidney Daniel Thomas	Constantine
Athol Blythe Thompson	Grand Rapids
Beulah Elizabeth Thompson	Harbor Springs
Bradley Lind Thompson	Ann Arbor
Clark Holland Thompson	Fenton
Curtis Orton Thompson	Vassar
Dean Bartowe Thompson	Lansing
Howard E. Thompson	Grand Rapids
James Pitkin Thompson	Anchorage, Ky.
Leland Standford Thompson	Toledo, Ohio
Lester Lee Thompson	Vassar
Mary Charlotte Thomson	Grand Haven
Donald James Thorp	South Haven
Marie Edna Thorpe	Detroit
Walter Emanuel Thorsberg	Midland
Harold Haen Thurlby	Hudson
Lee Mohrmann Thurston	Central Lake
Troy Graydon Thurston	Colon
Helen Stanley Tibbals	Detroit
Henry McLean Tibbits	Chicago, Ill.
Andrew Tiesenga	Holland
Helen Tighe	Plymouth
Lois Elizabeth Tillett	Peru, Ind.
Lucille Lockwood Tinker	Ann Arbor
Mary Jessica Tinsman	Ann Arbor
Mary Henrietta Tischer	Salem, Ore.
Frank Lindley Tobey	North Newport, N. H.
Charles Boyer Todd	Hastings
Edna Marie Toland	Springfield, Ohio
Mariam Sarah Toles	Douglas, Ariz.

Walter Roscoe Osborne Tonkin, *l*	Edwardsburg
Clifford Martin Toohy, *l*	Leslie
Ernest Clarence Toomey	Marenisco
Sam Toplon	Hubbell
Matthew Scott Towar	Detroit
Rita Belle Tower	Flint
William George Towl	Cass City
Charles Adams Towler	Olivet
Blanche Mary Towne	Saginaw
Nathan Clarence Towne	Des Moines, Iowa
Gladys Leona Townsend	Grand Rapids
James Worth Townsend	Jackson
Martha Ann Townsend	Brown City
Warren Hamlyn Townsend	Lockland, Ohio
†Sylvester Leonard Traub, *e*	Cleveland, Ohio
Zylphia Adella Traviss	Mesick
Marion Kate Treadgold	Port Huron
Mildred Treat	Glastonbury, Conn.
Margaret Louise Tremaine	Cheboygan
Harvey McCormick Trimble	Indiana, Pa.
Carl Moran Tritschler	Chicago, Ill.
Marshall Francis Troester	Detroit
Loren DuBois Troost	Niles
Milton Samuel Trost	Louisville, Ky.
†Alfred Bernard Trudeau, *ea*	Greenland
Elinor Lindsley Trueman	Munising
Harold Spencer Trueman	Munising
Logan LaMonte Trumbull	Elkhart, Ind.
Harold Anthony Trumpour	Cheboygan
Robert Speer Tubbs	Corning, N. Y.
Charles Cecil Tuck	Coral
Geta Lucile Tucker	Kibbie
Gladys Tuckerman	Battle Creek
Ruth Agnes Tulloh	Rose City
George William Turnbull	Chelsea
Joseph Wren Turner	Lyons, N. Y.
Olive Grace Turner	Hart
Robert Williams Turner	Council Bluffs, Iowa
Adelaide Louise Tuttle	Coldwater
James Henry Tuttle	Tulsa, Okla.
George Burdette Tuxbury	Muskegon
Lindor Ullin	Kendallville, Ind.
Julius William Ulmer	Menno, S. Dak.
George Bernhard Ulvild	Escanaba
Charles Jesse Underwood	Tecumseh
David Harold Underwood	Tecumseh
Thomas Ingle Underwood	Ann Arbor
William Lovell Underwood	Highland Park, Ill.
DeNorval Unthank	Kansas City, Mo.
Bernice Arminda Updike	Detroit
Elmer Charles Upton	Saint Louis, Mo.
Logan Clarence Urquhart	Lansing
Charles Alton Vail	Middletown, N. Y.
Ethel Vail	LaPorte, Ind.
Laurence Worth VanAken	Newton, Kans.
James Spencer VanAntwerp	Benton Harbor
Peter John VanBoven	Grand Rapids
Alexander Peter VanBrunt	Saint Joseph, Mo.
†Anna VanBuskirk, *g*	Kalamazoo
Charles Edgar VanCleef	Oklahoma City, Okla.
Ernest Albert Vandenboom	Marquette
Bessie Andrus Vandeventer	Hastings
John Frederick VanDuren	Grand Rapids
David Lowry VanDusen	Detroit

Donald Howell VanHorn	Elmira, N. Y.
Julia vanLeeuwen	Grand Rapids
Laurence Reed VanNess	Minneapolis, Minn.
Marjorie Celina VanNorman	Detroit
David VanOmmen	Hudsonville
John VanOosten	Grand Rapids
John Darling VanSchoick, *h*	Jackson
Alice Harriett Vanselow	Syracuse, N. Y.
Marie Wilhelmina VanWestenbrugge	Grand Rapids
Marjorie Alice VanZandt	Birmingham
Anna Amelia Vardon	Newberry
Clare Richard Varty	Deckerville
Alfred Walter Veit	Wapakoneta, Ohio
Karl Herget Velde	Pekin, Ill.
Ralph Bryan Verfurth	Bisbee, Ariz.
Susan Sherrill Verlenden	Darby, Pa.
Dale Jacob Vernier	Archbold, Ohio
John Frederick Vick	Ann Arbor
Esther Kimmel Vickery	Detroit
Merrill DeForest Vincent	Maplewood, Mo.
Gladys Evalyn Vinter	Detroit
Anna Grace Visscher	Holland
William Lyman Vliet	Clarkston
Mildred Laverne Vorce	Cleveland, Ohio
Arthur Ralph Vorys	Lancaster, Ohio
Marjorie Maude Votey	Grand Rapids
Clarissa Dorothy Vyn	Grand Haven
Mark Wade	LaGrange, Ill.
Carol Wana Wadhams	Ann Arbor
Howard Marcenus Wadley	Detroit
Herbert Phillip Wagner	Essexville
Richard Joseph Wagner	Sidney, Ohio
Harold William Wahl	Alden, N. Y.
Eugene Jacob Wait	Reynolds, Ill.
Lewis Patrick Waldo	Lewiston
Walter Oscar Walford	Flint
Emily Leech Walker	Birmingham
Frank Elliott Walker	Bay City
Harlan Nichols Walker	Highland Park
Harriet King Walker	Ann Arbor
Portia Walker	Buffalo, N. Y.
Ross Graham Walker	Battle Creek
Lyndly Andrus Walkling	Merrill
Samuel Morris Wall	Cadillac
Henry Jacob Wallbrunn	Piqua, Ohio
James Merrill Walley	Steelton, Pa.
Arch Walls	Pontiac
Samuel Walper	Detroit
Edward Francis Walsh, Jr.	Bartlesville, Okla.
Genevieve Ann Walsh	Ann Arbor
Margaret Virginia Walsh	Evanston, Ill.
Erich Albert Walter	Ann Arbor
Fred Ralph Walter, *l*	Detroit
Anna von Walthausen	Ann Arbor
Marie Pauline Emily von Walthausen	Ann Arbor
Florence Elizabeth Walton	Danville, Ill.
Ivan Henry Walton	Mount Pleasant
Florence Katherine Walz	Ann Arbor
Eugene Austin Ward	Big Rapids
John Ambrose Ward	Watertown, N. Y.
Mary Grace Ward	Toledo, Ohio
Robert William Ward	Ypsilanti
Edward Carlyle Warner	Buffalo, N. Y.
Helen Louise Warner	Muncie, Ind.

Maxwell Dudley Warner	Grand Rapids
Ruth Annette Warner	Muncie, Ind.
Cyrus James Warren	Rapid City, S. Dak.
Dorothea Warren	Rapid City, S. Dak.
†Arthur Philip Warriner, *g*	Fort Wayne, Ind.
Norman William Wassman	Bellaire, Ohio
Harry Rempel Wasson	Columbus, Ohio
Lee L. Waterbury	Ann Arbor
Lester Elba Waterbury, *l*	Chicago, Ill.
Phyllis Wheatley Waters	Charleston, W. Va.
Charles Frederick Watson	Muskegon
Henry Hilton Watson	Sault Ste. Marie
Harold Duane Watterson	Grand Rapids
John Dennis Watts	Detroit
†Owen Jefferson Watts, *l*	Wagoner, Okla.
Valda Louis Watts	Alto
Frances Amlar Way	Battle Creek
Lewis Richard Way	Traverse City
Arthur Weadock	Saginaw
George Philip Weadock	Detroit
Thelma Weaver	Muskegon
Willis Weaver, Jr.	Lockport, N. Y.
Christian Ray Webb	Toledo, Ohio
Helen Frances Webber	Creede, Colo.
Cyril Bertram Webster	VanWert, Ohio
Frieda Augusta Wedemeyer	Chelsea
Virginia Warren Weeks	Rockville Center, N. Y.
Emma Dorothea Wegener	Detroit
Karl Lehman Wehmeyer	Ann Arbor
Lewis Edgar Wehmeyer	Quincy, Ill.
†Henry Herman Weideman, *l*	Detroit
Martin Albrecht Weinlander	Sebewaing
Sara Gladys Weir	Laurium
Philip Pinkerton Weisberg	Sandusky, Ohio
Frank Andrew Weiszer, *m*	Detroit
Helen Lewis Welborn	Roanoke, Va.
Medard William Welch	Chicago, Ill.
Richard Enlow Welch	Chicago, Ill.
Wilma Elleda Welch	Jackson
Charles Neil Weller, *m*	Ithaca
Harry Alexander Wellford	Memphis, Tenn.
Marion Roy Wellford	Memphis, Tenn.
Carlton Frank Wells	Kalamazoo
William Conrad Weltmann	Saint Joseph
Archibald Gibson Wenley	Ann Arbor
Frances Marshall Wesley	Port Huron
Kenneth Charles Wesley	Adrian
Maurice Aaron Weslow	Anderson, Ind.
Helena Lois Wessinger	Ann Arbor
Walter Kenneth Westbrook	Detroit
Walter Scott Westerman, Jr.	Ann Arbor
Frank Wyckoff Weston	Lansing
Frank Carl Wetzel	Harrison, N. J.
Francis Joyce Wheeler	Homer
Hildreth Katherine Wheeler	Salem
Robert Irving Wheeler	Saint Louis
Declan Edward Whelan	Holland
Gladys Louise Whelan	Ann Arbor
Marjorie Marie Whelan	Ann Arbor
Ingle Burgess Whinery	Grand Rapids
Aloysius Michael Whitaker	Shenandoah, Pa.
Clifford Vaughan Whitcomb	Coldwater
Clarence Ray White	West Brooklyn, Ill.
George Olin White	Rhinecliff, N. Y.

Grace Dorothy White	Detroit
Harold Kirk White	Owosso
Myrtle May White	Bronson
William North White	Walton, N. Y.
Hugh Carr Whitehorne	Delta, Ohio
Stanley Judson Whiteman	Fostoria, Ohio
Joseph Edwin Whitlow	Hastings
Lemuel Coates Whitney	Lawrence
Cecil Vivian Wicker	Lockport, N. Y.
Walter Sterling Wickliffe	Ann Arbor
Bernard Ducharme Wicks	Hopkins
†Alice Young Wieber, *g*	Houghton
Lester Merrill Wieder	Detroit
Elton Ewart Wieman	Tejunga, Cal.
Ross Edward Wigent	Whitefish Point
Olive June Wiggins	Lupton
Norma Irene Wight	Yale
Ione Alwilda Wilber	Charlotte
Paul Chester Wright Wilcox	Columbia City, Ind.
Barbara Olive Wild	Bay City
William Frederick Wild	Bay City
Charles David Wiley	Edgerton, Ohio
Caroline Gay Wilgus	Ann Arbor
Leland Joseph Wilhartz	Chicago, Ill.
Ralph Loraine Wilkins	Detroit
Charlotte Mary Wilkinson	Detroit
Frank Alexander Willard	Topeka, Kans.
Blanche Hill Williams	Rochelle, Ill.
Dorothy Douglass Williams	Detroit
Ernest Francis Williams	Washington, D. C.
Glenn Otis Williams	Bolivar, N. Y.
Lewis Ronald Williams	Huron, Ind.
Marian Williams	Ann Arbor
Orva Gelson Williams, 2d	Chicago, Ill.
Theodore Williams	Providence, R. I.
William Wright Williams	Ann Arbor
Louise Berry Williamson	Duluth, Minn.
Howard Smith Willson	Lansing
William Jenkinson Willson	Port Huron
Carl Huntington Wilmot	Gladwin
Charles Frederick Wilner	Plymouth, Pa.
†George Duncan Wilner, *g*	Plymouth, Pa.
Alice Kathleen Wilson	Muskegon
Arch Davies Wilson	Newcastle, Pa.
†Clair DeCamp Wilson, *ea*	Jackson
†Conson Cummins Wilson, *l*, *g*	Jackson, Tenn.
Donald Earl Wilson	Saginaw
Harriet Ethel Wilson	Ann Arbor
*John Howard Wilson	Leavenworth, Kans.
John Sanford Wilson	Los Angeles, Cal.
Marian Graves Wilson	Ann Arbor
Paul Revere Wilson	Detroit
Percival Lowe Wilson	Leavenworth, Kans.
Ruth Irene Wilson	Ann Arbor
Seymour Burling Wilson	Grand Rapids
Glenn Audubon Wilt	Franklin, Pa.
Dorothy Leonard Wilton	Grosse Ile
Clark Milo Wimbles	Howell
Mildred Harter Winch	Fort Wayne, Ind.
Constance Mabel Winchell	Ann Arbor
Guilford Reagan Windes	Winnetka, Ill.
Cass Edward Windiate	Pontiac

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* Died March 21, 1917.

Cassius Winkelman	Wausau, Wis.
Ray Elizabeth Wise	Detroit
Edward Adolph Wishropp	Paola, Kans.
Edward Donald Witt	Saint Joseph
Caroline Alice Wittman	Toledo, Ohio
Walter Edward Wobrock	Detroit
Harold Frank Wochholz	Albion
Alice Margaret Woessner	Ann Arbor
Bernard Wohl	Detroit
Clara Bertha Wohlfahrt	Detroit
Harry William Wolfe	Lafayette, Ind.
Helen Marie Wolfe	Detroit
Saling Henry Wolfe	Chicago, Ill.
Townsend Harold Wolfe	Ann Arbor
Fritz Gustav Wolff	Grand Forks, N. Dak.
Paul Dubs Womeldorf	Rebersburg, Pa.
Annetta Lois Wood	Ann Arbor
Clad Wilburn Wood	Grand Rapids
Dorothy Jane Wood	Ann Arbor
Gerald Sterling Wood	Decatur
Harry Dale Wood	Adrian
Julius Barber Wood	Charlotte
Morrison Chalmers Wood	Chicago, Ill.
Harry Stevens Woodford	Goshen, Ind.
John Thornton Woodford	Paris, Ky.
Joseph Edward Woodman	Bennington, Vt.
Marsh Bradford Woodruff	Perry, Okla.
William Reuben Woods, Jr.	Becket, Mont.
Beatrice Woodward	Port Huron
William Roland Woodward	Leetonia, Ohio
Harriet Price Woodworth	Lansing
Ruberta Ingersoll Woodworth	Lansing
Alice Electa Worcester	Manila, P. I.
Sara Riford Worth	Grand Rapids
Alice Maud Worun	Ironwood
Teofil Wilfred Wozniak	Bessemer
Carroll Spaulding Wright, *m*	Conneaut, Ohio
Donald Rhodes Wright	Manistique
Evadne Rivard Wright	Detroit
George Andrew Wright, Jr.	Big Rapids
Lela Marie Wright	South Haven
Marie Olive Wright	Toledo, Ohio
Vivian Ealph Wright	Ann Arbor
Roy Edward Wrobble	Superior, Wis.
Rudolph Fred Wuensch	Rochester, N. Y.
Frieda Ethel Wuerfel	Ann Arbor
Ernest Conrad Wunsch	Detroit
Frederick James Wurster	Detroit
Elizabeth Luce Wylie	Ann Arbor
Margaret Wylie	Niagara Falls, N. Y.
Marjorie Hatfield Wylie	Shelby
Frederick Fullerton Wynn	Sherwood, N. Dak.
Pei Chien Yang	Yangning, China
Earl Carroll Yates	Pittsburg, Pa.
Anthony Joseph Yech	Ludington
Donald Purdy Yerkes, Jr.	Northville
Frances Evelyn Yerkes	Northville
Margaret Allida Yerkes	Northville
Robert George Yerkes	Detroit
Emile Benjamin Yoakum	Warren, Ariz.
Margaret Lucretia Yocum	Jackson
Benjamin Lee Young	Hingham, Mass.
†Clara Eloise Young, *g*	Ann Arbor
Donald Cook Young	Mayville, N. Y.

Floyd Eugene Young	Ann Arbor
Kathleen Elizabeth Young	Detroit
Raymond Andrews Younger	Celina, Ohio
Bessie Irene Yutzey	Middleton
Walter John Zabel	Sturgis
Julian Edmund Zapp	Chicago, Ill.
Paul Aloysius Zapp	Chicago, Ill.
Joseph Augustine Zastrow	Lapeer
Harold Morris Zeiger	Pueblo, Colo.
Herman Sigmund Zeve	Youngstown, Ohio
Walter Emil Ziegenbein	Jackson
Arthur Edward Zigler	Elkhart, Ind.
Clifford Reed Zimmerman	Pemberville, Ohio
Karl Stanley Zimmermann	Marine City
Charles Bogardus Zipf	Freeport, Ill.
Emma Frances Zur Muehlen	Grand Rapids

The following students* are enrolled in regular University classes meeting in neighboring cities.

Lucile Mary Adams	Jackson
John Alford	Fairgrove
Bess Louise Allen	Jackson
Cora L. Allen	Jackson
Emilie Alberta Allen	Detroit
Esther Louise Allen	Detroit
Frank Harlow Atkinson	Highland Park
Edith Dean Austin, *g, ss*	Jackson
Orpha Mae Ayres	Detroit
Emily Beatrice Baker	Detroit
Helen T. Baker	Detroit
Jennie Belle Ballard	Jackson
Martha White Bancker	Jackson
Harrie Louise Banks	Detroit
Edith May Barley	Detroit
Susy Barnes	Howell
Miriam Odella Barton	Highland Park
Frona Bates	Jackson
Minnie R. Baty	Jackson
Edith May Bacon Beck	Detroit
Frances Marion Beck	Jackson
Dwight O. Beeker	Jackson
Ethel Heywood Bennett	Jackson
Margaret Douglas Bennett	Jackson
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Ethel Mae Biehn	New Baltimore
Mary W. Bingham	Jackson
Lotta E. Birdsall	Saginaw
Harold Bond Bliss	Saginaw
Arthur Collier Bloomfield	Jackson

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* The students in this list are enrolled in classes taught by members of the Faculty of the College of Literature, Science, and the Arts as sections of courses also offered by them in Ann Arbor. The requirements as to attendance, work, and examinations are the same as for students in residence. Students satifactorily completing such courses receive, as in the Summer Session, credit certificates entitling them upon matriculation to full credit for these courses.

An italic letter following the name signifies that the student is also enrolled in another School or College of the University during the year 1916-1917, as follows: *g*, Graduate School. An italic *s* denotes that the student was also enrolled in the Summer Session of 1916.

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Mabel Elizabeth Booth	Detroit
Ted Booth	Grand Rapids
Mabyn Bowen	Detroit
Mrs. Elmer Braley	Howell
Jeannette M. Brigham	Howell
Louis Samuel Brooke	Howell
Dee Wealthy Brown	Jackson
Eunice Ann Brown	Detroit
Helen O. Brown	Detroit
Jeannette Brown	Jackson
Jessie I. Buchanan	Detroit
Louise E. Buck	Saginaw
Frances Ardelle Burnham	Saginaw
Edith Gibson Burroughs	Detroit
Mary Katherine Cahill	Detroit
Ruth Ramsdell Campbell	Grand Rapids
Alice Jane Carlisle	Howell
Kate Robeath Carlisle	Saginaw
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Mae Belle Carroll	Detroit
Laura Belle Carson	Detroit
Ellen Cassidy	River Rouge
Inez Estella Caswell, *ss*	Detroit
Anna Rankin Chambers	Saginaw
Henry S. Chase	Carleton
Maurice L. Chertoh	Detroit
Carrie Estelle Christiancy	Detroit
Kenneth Cornell Clapp	Grand Rapids
Albert Henry Clark, *ss*	New Baltimore
Edwin Claus	Detroit
Martha Elliot Clay	Grand Rapids
John Simeon Cleavinger	Jackson
Elizabeth Cleveland	Detroit
Maude E. Cole	Jackson
E. Gladys Cook	Howell
Faith Cooper	Detroit
Leigh Guillot Cooper	Detroit
Anna B. Corcoran	Wayne
Alice Maude Corns, *ss*	Detroit
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Leila Rushbrook Courter	Howell
Inez Fulton Covert	Detroit
Ethel Elvena Crandal, *ss*	Howell
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Florence Cruzon	Jackson
Ida Amelia Culver	Jackson
Hazel Edith Cummings	Jackson
Margaret Agnes Daley	Detroit
Adell Davis	Detroit
Florence Mabel Dearing	Jackson
Almena Rebecca DePuy	Jackson
Una Edith DeVoe	Detroit
Lola Electa Douglas	Jackson
Katharine Mitchell Dow	Detroit
Hugh M. Driscoll	Grand Rapids
Amelia Philippine Durst	Detroit
Joseph Dutton	Howell
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Verena Mary Engel	Detroit
Ethel Jane English	Saginaw

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Grace Edith Goodrich	Detroit
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Henry Neff Anderson		Aberdeen, Wash.
Melvin Delaus Anderson	E	Grand Rapids
Sidney Edwin Anderson	E	Detroit
William Knowlton Anderson	Mar	Flint

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[*] The letters following the names indicate the course or line of work the student has chosen to pursue; C, denoting civil engineering; M, mechanical engineering; E, electrical engineering; Ch, chemical engineering; Mar, marine engineering; BSE, bachelor of science in engineering; AI, architecture, general program; AII, architectural design program; AE, architectural engineering; S, miscellaneous studies not leading to any degree. As students are not asked to make choice of course until the beginning of their second year, the absence of a letter indicates that the student is in his first year. A dagger (†) preceding a student's name signifies that he also pursued studies for the whole part or part of the year, in some other School or College of the University indicated by an italic letter following the name, to-wit: *a*, College of Literature, Science, and the Arts; *m*, Medical School; *l*, Law School; *p*, College of Pharmacy; *h*, Homoeopathic Medical School; *d*, College of Dental Surgery.

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Harold Lafayette Andrus	C	Flint
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Elmer Randall Austin	E	Buffalo, N. Y.
Cordon Robert Avery	M	Ann Arbor
Marquis Henry Ayers	M	Detroit
Will Crane Babbitt	Ch	Lockport, N. Y.
Arthur Delbert Bachtel	Ch	Canton, Ohio
George Aldrich Bailey		Paw Paw
William James Bailey		Trenton
Harold J. Bair		Canton, Ohio
Henry Elbridge Baker	C	Plymouth
Joseph Lincoln Baker		El Paso, Ill.
†Rest Russell Baker, *g*	E	Williamsport, Pa.
Robert Bullis Ball	Ch	Ann Arbor
Joseph Dean Ballard	M	Genoa, Ohio
Lyman Jay Ballard	Mar	Ann Arbor
Harry Hawk Barber		Moline, Ill.
James Adelbert Barger		Detroit
William Louis Barie	M	Detroit
Charles Burton Barnard	M	Constantine
Harold Osborne Barnes	C	Chicago, Ill.
Nevin Charles Barnes	S	Franklin, Pa.
ValRoy Shield Barretta		Vineland, N. J.
Donald Barron	Ch	Addison, N. Y.
Eugene Alfred Bartelme	E	Chicago, Ill.
Angus Earl Barton	Ch	Sault Ste. Marie
Carl Osborn Barton		Sault Ste. Marie
James Bartuska, Jr.		Whiting, Ind.
Richard Gregory Barzen		Kansas City, Mo.
Dale Forrest Baskins	E	Saginaw
Clark Lodge Bassett	E	Grosse Ile
Herbert Boutwell Bassett	E	Paw Paw
Carl Arthur Batcheller	M	Olean, N. Y.
James Laidlow Bateman	Ch	Lansing
Milton Clement Baumann	M	Dayton, Ohio
Paul Emil Baur	E	Goshen, Ind.
Allen Orlando Beach	M	Saint Johns
Luther Hugo Beach	S	Ann Arbor
Charles Philip Beath	Ch	Escanaba
Elton Joseph Beaullieu		Jeanerette, La.
Charles Richard Beaver	C	Cadillac
Joseph Jerome Bebean		Rockland
Thomas Gordon Bedford	C	Flushing
Ralph Byron Beebe	Ch	Otsego
Clarence Arthur Beery	M	Ann Arbor
Glenn William Behler	M	Lowell
Taeke Beiboer	C	Grand Rapids
Harry Rush Bell		Schoolcraft
John Carl Beltz		Marietta, Ohio
Roberts Edwin Bement	M	Lansing
Rafael Jorge Benero		San Juan, P. R.

Alvin Carl Benkelman	Ch	Cass City
Evan Heber Benoy	C	Owosso
Glenn Palmer Bentley	M	Detroit
Royal Carl Bergvall	E	Stephenson
Wesley Elmer Bergvall		Stephenson
Earl Berry	C	Gladstone
Lathrop Fielding Berry	M	Jackson
Robert Lowry Biggers	M	Detroit
Irvin Arthur Billiar	C	Depew, N. Y.
Karl Bintz	M	Union City, Ind.
Lloyd Ivan Birckelbow	M	Bloomington, Ill.
Roger Birdsell	M	Washington, D. C.
Charles Trueman Bishop	C	South Haven
Firmin Joseph Bishop	C	Sault Ste. Marie
Dewey Bjork		Crystal Falls
Joe Robert Blackinton		Flint
Joseph Alex Blecki	Ch	Detroit
Clyde Carleton Bleil	Ch	Lakewood, Ohio
Cornealius William Blom	Ch	Holland
Charles Reuben Bloomer	E	Norwalk, Ohio
Raymond Francis Blowers	M	Kalamazoo
Oliver Edward Boas	M	Detroit
Lewis Henry Bodman		Toledo, Ohio
William John Boehm	Ch	Denver, Colo.
John Reemer Boersma	M	Detroit
Reinhold Erwin Boes		Ann Arbor
Melton Hovsep Boghosian	C	Boston, Mass.
William Burlin Boice	E	Toledo, Ohio
Seymour Van Bolton		New Hartford, N. Y.
Chester Cornwell Bond	E	Holyoke, Mass.
Juan Amédée Bonnet		Vieques, P. R.
Orris Bonney, Jr.	C	Grand Rapids
William Graydon Booth		Highland Park
Donald Borland	M	Imlay City
Joseph Samuel Borodawkin		Harbin, Manchuria
Gordon Willard Bottimer	E	La Salle
Curtis Edward Bottum		Hastings
David Grosvenor Bovee	M	Reno, Nev.
Cyril Yarling Bowers	E	Dayton, Ohio
Harry Ludwig Weber Bowles	C	Detroit
Harvey Eames Boyce	M	Ann Arbor
William Merlin Boyd		Indianapolis, Ind.
Allan George Boynton		Hornell, N. Y.
Henry Norman Brand	M	Toledo, Ohio
Walter George Brayer	M	Rochester, N. Y.
Nicholas Joseph Brazell	Mar	Tacoma, Wash.
Byron Evans Breckenridge	M	Hamilton, Ont.
Charles Adelbert Breitung	Ch	Grand Rapids
Joseph Francis Brennan		Fort Wayne, Ind.
William Edward Brennan	M	Fort Wayne, Ind.
Albert William Bretsch	Ch	La Fargeville, N. Y.
Howard Hawley Brewer	M	Sherman, N. Y.
Robert Sycklemoore Bridge	M	Detroit
Charles Ernest Briggs	M	Detroit
George Kennedy Briggs		Brookline, Mass.
James Bayard Brill	C	Indianapolis, Ind.
Warner Cotton Brockway	C	Erie, Pa.
Willis Brodhead	E	Detroit
Harry Theodore Brohl	M	Sandusky, Ohio
Abraham Ditmas Bromley	M	Pontiac
Hubert Devitt Bronson		Hastings
Edward White Brousseau	M	New Orleans, La.
Charles Alexander Brown	E	Rochester, N. Y.

Clair Llewellyn Brown		Cassopolis
Edmund McConnell Brown	M	Fredericktown, Ohio
Frank Perry Brown		Lakewood, Ohio
Milford Neil Brown		Gladstone
Ray Eber Brown	Mar	Battle Creek
Merritt Bruch	C	Wilmette, Ill.
Lawrence William Brunson	E	Saint Johns
Walter Wendell Brunt		Azalia
James Sutter Brusstar	E	Detroit
Arthur Burris Buchanan		Sault Ste. Marie
Hugh Leslie Buchanan	Ch	Detroit
Walter Harry Buchhagen	M	Steubenville, Ohio
Issac Hugh Buchman	C	Rapid River
Harland H. Buck		Lyons
Joseph Bartram Buckley	E	Ann Arbor
Stanley Charles Burbridge	M	Highland Park
Claude Harvey Burdick	Ch	Flint
Ralph Waldo Burleigh	Ch	Portland, Ore.
Bruce Oscar Burlingame	E	Grand Rapids
Spencer Burnham	E	Ann Arbor
Claude McLain Burns	C	Detroit
Elmer Cameron Burns	Mar	Ann Arbor
George Sanford Burr		Plymouth
Julian Sage Burrows	Mar	Saginaw
Lees Joslyn Burrows		Saginaw
Charles Arthur Burton		Lakewood, Ohio
Ebenezer Bushnell		Cleveland, Ohio
Leland Henry Buxton		Detroit
Donald Baldwin Caldwell	C	Chicago, Ill.
Paul James Calvert		Wellsville, N. Y.
Harry Leslie Calvin	C	Detroit
George Francis Campau	Ch	Alto
Archibald Francis Campbell	M	Detroit
Clarence Barton Campbell	M	Owosso
Clarence William Campbell	E	Lockport, N. Y.
Elbert Fletcher Campbell	C	Plymouth
Glenn Erwin Campbell	Ch	Pontiac
Malcolm Colin Campbell		Detroit
Raul dos Santos Caneco	S	Rio de Janeiro, Brazil
Dwight Joseph Canfield		Mount Clemens
Louis Cantor	C	Detroit
Francis Clement Carew		Youngstown, Ohio
William Anderson Carl	Ch	Kingston, N. Y.
Clarence Miller Carothers	E	Jackson
Paul Eugene Carrick	Mar	Charlotte
John Primrose Carritte, Jr.	Ch	Detroit
†Howard Leslie Carroll, *g*	M	Lockport, N. Y.
Philip Carroll, Jr.	E	Poplar Bluff, Mo.
Franklin Charles Carter	Ch	Cuba, Mo.
Charles Barnes Cartwright	C	Detroit
Lee Owen Case	Ch	Ann Arbor
William Jesse Case	M	Highland Park
Andrew Francis Caughey	M	Ann Arbor
Newell Kirby Chamberlin		Cleveland, Ohio
Ralph Edwin Chapin	Ch	Ann Arbor
William Lewis Chapman		Bay City
Percy Paul Charles	S	Brooklyn, N. Y.
Nikanth Ramchandra Chavare	S	Kolhapur, India
Yu Soo Chen	Ch	Changteh, China
Harold Moses Cherry	Ch	Buffalo, N. Y.
Gardner Hotchkiss Chidester		Hastings
Terrell Lone Childs	M	Mendon
Edgar Stanton Chipman		Ann Arbor

Chester Charles Chopp	Ch	Lakewood, Ohio
Milton Philip Christa	C	Detroit
Arthur Lawrence Christie	E	Muskegon
Wallace DeRemer Christie	Mar	Sewaren, N. J.
Harold Collyer Church	M	Detroit
Albert Loring Clark, Jr.	M	Des Moines, Iowa
George Albert Clark	E	Saginaw
Arvine Nelson Clarke	E	Scranton, Pa.
†William Stoup Clarkson, *a*		Ann Arbor
Benjamin James Cleaver		Ann Arbor
Claude R. Clingman	M	Caledonia
Samuel William Frederick Clutton		Great Falls, Mont.
Louis Cecil Cohen		Little Rock, Ark.
Samuel Cohen	Ch	Rochester, N. Y.
Alfred Henry Cohn	C	Buffalo, N. Y.
Bradford Claude Colcord		Clairton, Pa.
Russell Alger Cole	C	Detroit
Stephen Phelps Collier	C	Pontiac
Wright Collier	C	Pontiac
Harold Wilson Collins	E	Detroit
Howard Nicholas Collins		Detroit
Robert Wetmore Collins	C	Jacksonville, Fla.
William Harry Collins	E	Mitchell, S. Dak.
Thomas Wilson Conant	E	Hubbell
Amos Clarendon Connell, A.B. *Olivet College*	E	Flat Rock
Walter J. Conrad		Hart
Abram Nathan Cook	Mar	Duluth, Minn.
George Arthur Cook	Mar	Duluth, Minn.
Ralph H. Cook	E	Traverse City
Ralph Payne Cook	M	Oswego, N. Y.
Robert Cook		Cleveland, Ohio
Walter Davis Cook		Saline
Roland Stevens Cooper	M	Detroit
Malcolm David Corbin	M	Detroit
Cyril Clement Corcoran	C	Cortland, N. Y.
Horace Marvin Hoyt Corey		Ann Arbor
Robert Craig Corlett	M	Oak Park, Ill.
Harold Tuttle Corson	C	Coldwater
Maynard Giles Cosgrove	E	Sylvania, Ohio
Rowe Hollice Cosgrove		Detroit
William Cotter	M	Saint Louis, Mo.
Hergert James Leland Cotton		Detroit
Charles Carroll Coult	M	Factoryville, Pa.
Raymond Hawkes Coulter	M	Detroit
Guillermo Aniba Covarrubias	S	Vina del Mar, Chile
Artemas Ward Cowing	Ch	Jackson
Guy Roswell Cowing	E	Flint
Thomas Baker Craigie	M	Detroit
Clifford Hill Cramer	E	Cramer, Pa.
Eugene Thompson Cranch	C	Erie, Pa.
Lou Revere Crandall	C	Toledo, Ohio
Louis Samuel Crane	C	Cleveland, Ohio
Harold Lloyd Crawford	Ch	Sault Ste. Marie
Clarence Harrison Crego, Jr.	Ch	Jackson, Tenn.
Charles William Crew	C	West Milton, Ohio
Sidney Willard Crocker		Ann Arbor
Samuel Lee Crump	E	Pittsford, N. Y.
William Roy Cruse	C	Detroit
Anibal Alberto de la Cruz		Santiago, Chile
Marcus Hotchkiss Crutcher	C	Nashville, Tenn.
Joseph Robert Cullinane		Lawrence
Howard Smith Cummins	M	Toledo, Ohio

Eugene Whitney Curtiss		Ardmore, Okla.
Willis Viertelle Curtiss	C	Toledo, Ohio
Alfred Oliphant Cuthbert		Ann Arbor
Maxwell Blount Cutting	E	Troy
Arthur Olans Dahlberg	E	North Escanaba
Lawrence Edward Daigle		Detroit
George Edward Dake	M	Muskegon
Charles Claire Dancer	Ch	Cleveland, Ohio
James Mateer Darbaker		Vandergrift, Pa.
Arthur Leicester Darwall		Vallejo, Cal.
Donald Charles Davidson	C	Evanston, Ill.
†Norman Hart Davidson, *g*	M	Iron Mountain
Otto Conrad Davidson, Jr.	E	Iron Mountain
David Herman Davis	M	Newark, N. J.
Frederick Earnest Davis	M	Detroit
Parlett Lee Davis	C	Ann Arbor
Robert Leland Davis	E	Grand Rapids
†Stanley Pettee Davis, *g*	C	Youngstown, Ohio
Winfield Crittenden Davis	C	Duluth, Minn.
Herbert Sidney Davy		Petoskey
Harold Redfern Day		Chicago, Ill.
John Christopher Dean		Dunkirk, N. Y.
Dean Jamison DeButts	M	Chicago, Ill.
David Hatfield Decker		Detroit
Smith J. DeFrance	E	Battle Creek
Lance Douglas De Harwood		Big Rapids
Howard Errett DeHaven	Ch	Houghton
Vernon Delameter	Ch	Las Vegas, Nev.
Lorenzo Albertus De Marsh	Ch	Menominee
Harry Arthur Dengler		Grand Rapids
Ralph Gregory Derragon	M	Pontiac
Martin De Ruiter	C	Grand Rapids
Fenno Ekke De Vries		Evanston, Ill.
Arthur Wells Dew		Jackson
Ralph Ellsworth Dickie	C	Indianapolis, Ind.
John T. Dickinson		Fennville
Frank Edward Dickson	C	Bellevue, Pa.
Louis Fred Dieterich	C	Washington, D. C.
Henry William Dieters	C	Detroit
Eginhard Dietze	E	Detroit
Davis Alcorn Diffenderfer		Fort Wayne, Ind.
Edward John Dignan	Ch	Youngstown, Ohio
†Goldwin Carrington Dinwiddie, *a*		Portland, Ore.
William Starrett Dinwiddie	C	Portland, Ore.
Edgar Lee Dixon	C	Detroit
Charles Kenneth Sigvert Dodd		Coloma
Russell Dodd	C	Highland Park
Harland Pray Dodge		Whitmore Lake
Charles Henry Doherty, Jr.	M	Grand Rapids
Haig Meheran Domboorajian	C	Ann Arbor
Harold Milton Donaldson		Mount Clemens
Victor Ronald Donatelli	C	Delevan, N. Y.
Roy Joseph Dondero	C	Mount Pleasant
Lucian Edward Dornick		Huntington, W. Va.
William Henry Dorrance, Jr.	C	Detroit
Merle Bee Doty	Ch	Battle Creek
Raymond Archibald Doud		Indianapolis, Ind.
Daniel Joseph Dougherty	Ch	Erie, Pa.
Benjamin Douglas		Grosse Ile
Willard Henry Dow	Ch	Midland
Peter Currie Downie	Ch	Detroit
Lloyd Winnie Dows	Ch	Hornell, N. Y.
Donald Mitchell Drake	C	Ann Arbor

Joseph Horace Drake, Jr., A.B. *University of Michigan*	M	Ann Arbor
Rollin Edwards Drake, Jr.		Ann Arbor
Ermin Earnest Dreese	E	Alanson
Ora Alfred Dresser	C	Lexington
James Warren Driver	Ch	Ann Arbor
Leslie Allen Droman	M	Lockport, N. Y.
Arthur Laurence Dubuque		Greenland
Elbridge Gerry Dudley, Jr.	M	Orange, N. J.
Rudolph Dueltgen	M	Rogers
Raymond Frederick Dunbrook	Ch	Grand Rapids
Lucien Herbert Dunham		Detroit
George Curtis Dunn		Detroit
Ralphe Orace Dunn	C	Grand Rapids
Clovis Evert Dyckman	E	South Haven
Albert Elliott Dyment		West Flamboro, Ont.
Morace Sylvester Easton	C	Benton Harbor
Stanley Harold Eaton	M	Kalamazoo
Ransom Miller Eckerson	M	Akron, N. Y.
Robert Roy Eckert		Cook's Falls, N. Y.
Nelson Winfred Eddy	C	Alpena
Lothar Alfred Ederer		Chicago, Ill.
Haynes Eli Edison		Grand Rapids
Russell Lafayette Edison		Grand Rapids
John Charles Edwards		Utica, N. Y.
Clarence Earle Eichelberger	M	Union Bridge, Md.
Frank Charles Eisenach	C	Fremont
†Willard Shepard Eldridge, *g*	M	Detroit
Abraham Michel Elkind		Harbin, China
Robert Delos Elliott		Detroit
Roy William Elliott	C	Prescott, Ariz.
†Irving Sanderson Ellison, *a*	Ch	Williamsport, Pa.
Stanley Hayes Emerick	M	Detroit
Francis Jiroch Emmons	E	Muskegon
Robert V. Enders		Benton Harbor
John Henry Engel, Jr.	M	Detroit
Harold Richard Erdmann	C	Petoskey
Einar Waldemar Erickson	Ch	Gladstone
Robert Herman Erley	C	Detroit
Robert Joseph Ernst		Detroit
Thomas Edison Eubank		Louisville, Ky.
Boyd Vincent Evans	M	Ann Arbor
Horace Reed Every		Brooklyn
Leonard Edward Ewald		Hartford
Carlo Mora Eyster	M	Toledo, Ohio
Everett Gustaf Fahlman	Ch	Kane, Pa.
James Ferdinand Fairman	E	Big Rapids
Edward Bradford Featherstone	E	Toledo, Ohio
Gordon William Ferguson	Mar	Sault Ste. Marie
Donald McKenzie Ferris	M	Harbor Beach
Lester King Ferris	M	Detroit
Edwin John Fettig	Ch	Saginaw
Frank Howard Field		Sandusky, Ohio
Melvin Lagrange Fish	Ch	Syracuse, N. Y.
†George Edward Fisher, *a*	Ch	Greenville, Pa.
Clarence Turner Fishleigh	E	Chicago, Ill.
Sherman Joseph Fitz-Simons, Jr.	M	Detroit
Laurence Hobart Fleck		Greenville
Hart Harris Fleming	M	Swampscott, Mass.
Milan Paul Fletcher		Erie, Pa.
Carl William Floss	E	Detroit
Francis Joseph Foley	E	Dollar Bay
Raymond Dietrich Foltz	M	Saint Joseph

George Harry Fong	E	Detroit
Arnold Forbear		Shelby
Charles Russell Ford	Mar	Moorestown, N. J.
Chester Lawrence Fordney	M	Saginaw
George Kern Forrester		Pueblo, Colo.
Frank Plidell Foster		Holly
Hubert Francis Foster	M	Grass Lake
Reginald Stott Franchot		Grand Rapids
George Walden Francis		Ann Arbor
Roswell Earle Franklin	Mar	Schenectady, N. Y.
†John Brandon Franks, g	C	Leavenworth, Kans.
William Ronald Frazer		Flint
Robert Gibbard Freeman	M	Flint
Earl Clayton Fries	Ch	South Bend, Ind.
Harvey Edward Frye		Ann Arbor
Charles Edward Fuess	Ch	Erie, Pa.
Lyman Howard Funkey	M	Hancock
Frank Nicholas Gaethke		Butte, Mont.
Maximino Galarza	C	Hermosillo, Mex.
James Harold Galloway	M	Sandusky, Ohio
John Lyon Gardiner	M	Laurel, Miss.
Dick Beckwith Gardner	M	Dowagiac
Hunter Everette Gardner		Fort Worth, Tex.
Clarence Bernal Garlock		Eagle
Thomas Clymonts Garrett	C	Lakewood, Ohio
Aquiles Gatti		Santiago, Chile
Elton Nicholas Gaul	Ch	Lockport, N. Y.
Gilbert Maurice Gay	C	Lansing
Welland Gay	C	Lansing
Alfred Harold Geen		Saint Thomas
Carl Ernest Gehring		Cleveland, Ohio
Roman Ferdinand Geller	Ch	Fowler
Eugene William Geniesse	Ch	Ann Arbor
John Collin Geniesse	Ch	Ann Arbor
Walter Charles Genthe	C	Wyandotte
William Frederick Gerhardt	Mar	Ann Arbor
Rudolph Clement Germanson	Ch	Escanaba
Walter Clemens Gernt	C	Detroit
Andrew Averne Gerry	C	Port Chester, N. Y.
Edmund Duncan Giauque		Niagara Falls, Ont.
Donald Frank Gibbs	C	Chester, Mass.
Edward Branford Gibson, Jr.		Ann Arbor
John Clark Giffen	C	Detroit
Charles Bernhardt Gildemeister	E	Detroit
Claud Emmons Gill	C	Ann Arbor
Henry Wartz Gilmore	E	Ypsilanti
Lloyd Thomas Ginn	C	Detroit
Srabion Vartan Givrigian	E	Sergeville, Armenia
Harold Eugene Gladhill	Ch	Beardstown, Ill.
Joseph Henry Glass		Ahmeek
Earle Dewey Glatzel		Ann Arbor
Stanley Imerman Glazer		Kalkaska
Burdette Glenn	C	Tarentum, Pa.
Carlisle Smith Glezen	M	Cheboygan
Dorrance Goddard	M	Ann Arbor
Charles Sherwood Godfrey	C	Bancroft
Abraham Jason Goldberg	C	Rochester, N. Y.
Martin Nathaniel Goldberg	M	Cleveland, Ohio
Harold Nicholas Golinvaux	M	Dubuque, Iowa
Miles Eddowes Goll		Dayton, Ohio
Charles Winfred Good	M	Flint
Robert Franklin Good		Dayton, Ohio
Reginald Martin Goodenow		Flint

John Storey Goodman		Saginaw
Charles Henry Goodrich	M	Davison
William Harry Goodrich	Ch	Salt Lake City, Utah
Harrison LeGrand Goodspeed	M	Grand Rapids
John Erwin Goodwillie		Ann Arbor
Winfield Goong	Ch	Chungking, China
Harold Arthur Gordon		Owosso
Carl Edward Gormsen	M	Gladstone
Wendell VanTuyl Gorton	E	Ypsilanti
Henslee Dupuy Goza		Houghton
Charles Henry Graff	M	Marshall
John Graffitt		Iron Mountain
Patrick Clifford Graney	C	Mount Hope, W. Va.
Howard Derby Grant	Ch	Ann Arbor
Carroll Lynn Graves	E	Grosse Ile
William Horace Graves, Jr.	Ch	Leslie
Clarence Parsons Green	C	Cleveland, Ohio
Samuel Greenspahn	E	Chicago, Ill.
Robert Clark Greenwald		Toledo, Ohio
William Harold Gridley		Detroit
John Kaough Grodi		Toledo, Ohio
John Anthony Gross	M	West Palm Beach, Fla.
Walter Robert Gross	C	Saginaw
Wylie Edgar Groves	E	Birmingham
Humphry Millett Kercheval Grylls	M	Detroit
Luis Juan Guerrero	C	Baradero, Argentina
Vincent Guillermety	C	San Juan, P. R.
William Francis Guinan	M	Northampton, Mass.
Orrin Smith Gulley		Detroit
Arthur Neil Gustine		Hartford
Ernesto Guzman	S	Santiago, Chile
Howard Morse Hadley		Oil City, Pa.
Laurence Burton Hadley	Ch	Evanston, Ill.
George John Haering	Mar	New York, N. Y.
Earl Frederick Hagen	E	Lake Linden
John Vincent Haidler		New York, N. Y.
Richard Allyn Haigh	E	Detroit
Eugene Michael Haley	M	Detroit
Charles Lawrence Hall		Detroit
Dorothy Hall	Ch	Toledo, Ohio
Joseph Guy Hall	C	Anoka, Minn.
Morris Moore Halsted		Birmingham
Herald Hamill		Plymouth
Newell Badger Hamilton		Ann Arbor
Lee Dieterle Handy	E	Detroit
Viggo Ellis Hansen		Manistee
William Charles Hansen	Ch	Pittsburg, Pa.
Waldo Garrett Harbert		Detroit
Elmer Pitney Hardell	C	Washington, D. C.
Charles Edson Hardy	Ch	Kenosha, Wis.
Rollin Burke Hargrove	Ch	Louisville, Ky.
Clarence Herman Harpst		Toledo, Ohio
George Paul Harpst		Toledo, Ohio
Samuel Harr	Ch	Youngstown, Ohio
George Rennels Harrington	E	Saint Louis
Louis Joseph Harris		Detroit
Horatio Paul Harsha	E	Charlevoix
Clarence Arthur Hart	C	Port Huron
Clarence Edwin Hart	Ch	Holyoke, Mass.
Frederick Wesley Hartmann		Grand Rapids
Clarence D. Hartsuff	M	Ann Arbor
Wallace Reynolds Harvey	E	Adrian

Howard Bertram Haskins	M	Detroit
Aboul Hassan		Shiraz, Persia
Donald Monroe Hatch	C	Marshall
Lloyd Rayburn Hatton	C	Alpena
Gilbert Francis Hauke	C	Washington, D. C.
Edward Hauser	E	Ann Arbor
Oscar Ernest Hauser	E	Ann Arbor
Willis Boyd Hayes, Jr.		Gouverneur, N. Y.
Herbert Goodrich Haynes	Mar	Hensonville, N. Y.
Rolfe Miller Hays		Battle Creek
Ralph Allington Hayward	Ch	Ashtabula, Ohio
John Wesley Hazelworth	M	Jackson
Edwin Ray Hazen	M	Erie, Pa.
Francis Gabriel Healy	Mar	Northampton, Mass.
George Willard Heard		Ontonagon
Clyde James Heath	E	Muskegon
Gardner Shepard Heath	E	Hubbell
Arthur Ervin Hecker	M	Greenville, Pa.
Sigurd Herman Hecksher	S	Copenhagen, Denmark
Walter Alfred Hedrick	E	Grand Rapids
George Walter Hegel	E	Detroit
Arthur Charles Heimerdinger		Lansing
Kenneth Warren Heinrich	Mar	Detroit
Carl Ernest Hellenberg	M	Detroit
Walter Sheldon Helmer	E	Escanaba
Fred Hendershot		Tecumseh
Martin Stanton Henley	Ch	Jackson
Erwin William Henschel	E	Detroit
Tom Hussey Heppeard	C	Mendon, Ohio
John Herlihy	M	Saint Johnsbury, Vt.
Gerard John Hernon		New York, N. Y.
Lewis Charles Herrmann	C	Grand Rapids
Carll Spencer Herzig	E	Toledo, Ohio
Harold Louis Herzig	E	Toledo, Ohio
Robert VanAlstine Hessler		Syracuse, N. Y.
Harold Cushman Heym		Detroit
John Davis Hibbard	M	Chicago, Ill.
Walter Roland Hickler		Lakewood, Ohio
Louis Brady Hicks	E	Edwardsburg
George Judson Higgins	Mar	Ann Arbor
Carlton Hill	E	Hart
Ernest Kelsey Hill	M	Marquette
James Russell Hill	C	North East, Pa.
†Theodore Case Hill, *g*	C	North East, Pa.
Robert Jacob Hiller	C	Dayton, Ohio
Carl Fred Helzinger		Royal Oak
Ralph Crocket Hine		South Euclid, Ohio
Ivan N. Hitchcock		Kalamazoo
Paul William Hoag	E	Marshall
Norman William Hobson	M	Grand Rapids
George Seward Hodges, Jr.	M	Pontiac
Howard Edmund Hodgson, A.B. *Fairmount College*	M	Wichita, Kans.
Harold DeWitt Hoffman	M	Ann Arbor
Carl Theodore Hogan		Williston, N. Dak.
Hellmuth Carl Hohman	Mar	Cleveland, Ohio
Glenn Willis Holcomb	C	Charlotte
Charles Schiffer Holihan		Detroit
Frank Holland	M	Elkhart, Ind.
Paul Holland	C	Woodville
Fred Herman Holloway	M	Rochester, N. Y.
Jacob Harry Holub	C	Akron, Ohio

Alfred Agnew Hook		Ann Arbor
Noal J. Hooper		Houghton
Samuel Reed Hornefius	Ch	McKeesport, Pa.
Herman Harry Horwitz	Ch	Cleveland, Ohio
Homer Lincoln Hosking	M	Laurium
Christian Frederick Hostrup	M	Clinton, Iowa
Alden Lane Howard		Washington, D. C.
Lucius Kneil Howard	M	Youngstown, Ohio
Hoyne Howe	M	Oak Park, Ill.
Herbert Joseph Howerth	M	Shamokin, Pa.
Stewart Beattie Howson		Saginaw
Samuel Leslie Hudd	M	Plymouth
James Theodore Huette	M	Detroit
James Albert Hughes	M	Ann Arbor
Lucius Gaylord Hulbert	Ch	Detroit
Harold Dallas Humphrey		Bellevue, Ohio
William John Hutchinson		Flat Rock
Edwin Jay Huntington	C	Ann Arbor
Nelson Heartwell Huntley	C	Ann Arbor
Arthur Lawrence Hurdley	E	Ypsilanti
Leopold Richard Hussa	Mar	Rockaway, N. J.
Preston William Husted		Addison, N. Y.
Victor Jerome Husted	Ch	Addison, N. Y.
George Irvine Hutcheson		Saint Thomas, Ont.
Harold DeBond Hutchinson	M	Uniontown, Pa.
Louis Brossy Hyde	C	Detroit
Milo Wilt Hyde	E	South Bend, Ind.
Norman Henry Ibsen	M	Chicago, Ill.
Lester Morton Ilgenfritz		Detroit
William Isham, Jr.		Fowler, Ind.
Teiji Ito, M.Sc., in Japan	E	Sendai, Japan
Lazar Itzkovich		Harbin, China
Samuel Curnow Jacka		Crystal Falls
Leon John Jacobi		Mount Clemens
William Albert Jaeger	C	Buffalo, N. Y.
Frank Edward Jagodzinski	M	Milwaukee, Wis.
Paul Milligan Jefferys		Lakewood, Ohio
Thomas Raymond Jeffs	C	Detroit
John Orla Jenkins	Ch	Ann Arbor
Arthur Curtis Jennings	M	Benton Harbor
Harold Haskins Jennings		Saint Joseph
Ralph Winthrop Jennings	Ch	Toledo, Ohio
William Hans Jensen	E	Marinette, Wis.
Clarence Pressley Jessup	C	Alma
Joseph Barnard Jewell	C	Fremont
Newton Halsey Johnson		Ironton, Ohio
†Vernon Theodore Johnson, *a*		Crete, Ill.
Waldemar Ogden Johnson, B.M.E.	Mar	Buffalo, N. Y.
William Gordon Johnston	M	Detroit
Henry Whitford Jones, 2nd		Cleveland, Ohio
Ralph Edson Jones		Greenville, Pa.
Carl Frank Joseph	Ch	Saginaw
Harold I. Josey	E	Shreveport, La.
Lloyd Rudolph Kalmbach		Chelsea
Maurice Yale Kapetansky	Ch	Detroit
Samuel Selig Kaplan	Ch	Chicago, Ill.
Morton Eisenman Katzenstein		Cleveland, Ohio
Anton Kaufmann	Mar	Saginaw
Dale Wilmer Kaufman		Ann Arbor
Claude Berton Keeney	E	Ann Arbor
Herbert Keidanz	Ch	New York, N. Y.
Theodore Henry Keidanz		New York, N. Y.

Henry Eastland Kelley		Cleveland, Ohio
James Alexander Kelly	S	Detroit
Paul Hanes Kemmer		Lima, Ohio
Dallas Smith Kendall		Ann Arbor
Edgar Rice Kendall	S	Toledo, Ohio
Edward Northam Kendall	E	Ann Arbor
Donald Brundage Kennedy	Ch	Sioux Falls, S. Dak.
Lyle W. Kennedy, A.B. *Defiance College*	E	Cement City
Earl Willey Kenrick		Onaway
Lawrence Vincent Kerber	M	Sandusky, Ohio
John Mead Kerr	Ch	Bay City
Clarence Frank Kessler	M	Sandusky, Ohio
Richard Hopkins Khuen		Saginaw
John Jennings Kilmer	E	Mass
William Squires Kilpatrick	E	Tacoma, Wash.
Reginald Gilman Kimball	M	Portland, Me.
Robert Allen Kimberley	C	Cleveland, Ohio
†Alan Forrest King, *a*		London, Ont.
Brice John King, Jr.	Ch	Centralia, Kans.
Winfield Cleveland King	Ch	Buffalo, N. Y.
Russell Fleming Kingston		Detroit
Russell Clough Kinsman		Calumet
Leslie Hosner Kintz	M	Ann Arbor
Max Kiselik	Ch	Newark, N. J.
Lamar Morey Kishlar	E	Ypsilanti
Claude Taylor Kitto	M	Dollar Bay
Oscar Christian Klager	E	Ann Arbor
Julius Klein	E	Newark, N. J.
Herbert Richard Knack		Detroit
Carl Halsey Knight	M	Detroit
Joseph Karl Knoerle	M	West Plains, Mo.
Henry Anthon Knowlson	M	Ann Arbor
John Stuart Knox	C	Cadillac
Harry Clarence Koch	M	Ann Arbor
Robert Franz Kohr	M	Washington, D. C.
Louis Fredrick Kolb		Bay City
Harold Deane Koonsman	E	Detroit
George Edmund Korten		Grand Rapids
Frank Joseph Charles Kortick	C	River Rouge
Lewis Robert Krell	M	Niles
Harry Morris Krohn	C	Detroit
George Fred Kronbach, 2nd	Ch	Monroe
George Andrew Kronberg	E	Thomaston
Max Frederick Kuhlman		Detroit
John Victor Kuivinen	M	Wakefield
Albert Tennant Kunze		Wyandotte
George Edward Oliver Kunze		Detroit
George William Kunze	Ch	Wyandotte
Hsien Kwei Kuo, A.B. *Saint Johns University*	C	Shanghai, China
Wing Chung Kwong	Ch	Canton, China
Earle Stuart Ladd	C	Wickford, R. I.
Alfred Wood Laird	Ch	Ann Arbor
Cecil Wells Laird	Mar	Seattle, Wash.
Minot Edwards Lane		Detroit
Erich Langenhan		Lakewood, Ohio
Raymond Moses Langley	M	Washington, D. C.
Warren Arthur Lanz	M	Utica, N. Y.
Walter Wair Larsh	C	Cheyenne, Wyo.
Jarl Evert Larson		Crystal Falls
Arthur Keehner Laukel	Ch	Detroit

Floyd Paul Laver	Ch	Erie, Pa.
Herman Lavine		Cleveland, Ohio
Reuben Herman Lawson	M	Cheboygan
Chester Stanley Lawton	Mar	Highland Park
Harry Raymond Leach	E	Saginaw
Sagito Jite Leach	M	Conneaut, Ohio
Hubert Samuel Leader	Ch	Grand Rapids
Louis Leagam		Waterbury, Conn.
Walton Alfred Lean	E	Laurium
Riley Ellsworth LeBay	M	Cleveland, Ohio
Raymond Warner Lee	Mar	Detroit
Abraham Lehrhoff		Newark, N. J.
Benjamin Harrison Leishman	S	Detroit
William Colon Lemon	C	Ann Arbor
Jay Lenick	E	Saginaw
Shoo Tze Leo	Ch	Puchi City, China
Sancho Balantacbo de Leon		Santa Cruz, P. I.
Simpson Catherwood Leonard, Jr.	M	Detroit
Donald Horton Lessig		Warsaw, Ind.
George Albert Leszczynski	M	Detroit
Meyer Levin		Detroit
Samuel Carlos Lewandorf	C	Newark, N. J.
Cyril Blackmore Lewis	Ch	Ypsilanti
Dean Anderson Lewis	E	Northampton, Mass.
George Merril Lewis		Bay City
Henry Arnold Lewis		Northampton, Mass.
Warren Copeland Lichty		Ann Arbor
Carl Edgar Liljegren		Ironwood
Walter Thomas Lilley	E	California, Pa.
Peter Leong Lim	Ch	Detroit
Frederick Herman Limberg		Port Huron
Herbert William Lincoln	E	Greenville
L. O. B. Lindstrom	E	Marquette
Donald Goodridge Little	E	Kalamazoo
Frederick Harrison Livermore		Washington, D. C.
Alan Varley Livingston	E	Englewood, N. J.
George Llewellyn	M	Detroit
Benjamin Noyse Lobdell		Onaway
Ralph Miner Lobdell	Ch	Coldwater
Bruce George Logan		Theodore, Ala.
Horace Caulkins Logan		Niagara Falls, Ont.
Ralph Dean Lombard		Buffalo, N. Y.
Harry Driesbach Long	C	Williamsville, N. Y.
Jay Earl Long	E	Steelton, Pa.
Carlos Guillermo Lopez	C	Quito, Ecuador
Victor Garay Lopez		Santiago, Chile
Everett Otley Loring	M	Dallas Center, Iowa
Paul Gordon Lorzer		New York, N. Y.
Nicholas Theodore Louckes	Ch	Jackson
Franklin Loucks	E	Grand Rapids
Frederic Alic Louden		Saginaw
Percy Stuart Lowe	Ch	Alton, Ill.
Stanley Tilton Lowe		Battle Creek
Francis Brown Lowry	M	Denver, Colo.
John Durward Lowry		Ann Arbor
Harold Ernest Lueck	E	Mancelona
Raymond Eugene Lueder	C	Wilkes-Barre, Pa.
Earl Kenneth Lukins		San Bernardino, Cal.
Arthur Harold Luse	Ch	Franklin, Pa.
John Thomas Lynch	E	Ann Arbor
Harry Curtis McBride		Romulus
Lawrence Francis McCloskey		Corning, N. Y.

William Raymond McCloy		Bay City
Allan Miles McConnell		Rochester, N. Y.
Stuart Alexander McCormick		Madison, Wis.
Robert Donald McCree	C	Chicago, Ill.
John Wood McDonald	E	Toledo, Ohio
†Craig Alexander McDougall, *a*		Detroit
Lewis Bain Adair McDowell	M	Saint Joseph
Raymond Jackson McElhannon		Washington, D. C.
Harold James McFarlan	C	Flint
Joseph Pettis McFarlen	E	Grand Blanc
Ralph Edgar McGee	Ch	Marietta, Ohio
Donald Constantine McHugh	M	Cadillac
†Clifford Thomas McIntyre, *g*	C	Saint Thomas, Ont.
Donald Cedric McIntyre	C	Grand Rapids
Harry John Mack	Ch	Saint Johns
Leslie John McKeachie		Holly
Waldo McCutcheon McKee	M	Grand Rapids
Charlton Dietly McKenzie	M	Quincy
Donald Gordon McKenzie		Ann Arbor
Maxwell Alexander McKenzie	C	Wallingford, Conn.
William Austin McKinley	M	Detroit
Earle Roderick MacLaughlin	C	Washington, D. C.
Joseph Hendrick McLean		Cohocton, N. Y.
Alexander Cameron McLellan		Bad Axe
Robert Letts McNamee	C	Ann Arbor
Armand Victor McPhee		Alpena
Frank Byron McVeigh		Detroit
John Reuben McWilliams		Sand Springs, Okla.
Dale Ray Maltby	M	Kalamazoo
Aaron Woodrooffe Manby	E	Niagara Falls, Ont.
Robert Ervin Manley		Dallas, Texas
Russell Thomas Mann	Ch	Three Rivers
Horace Jewell Manning		Lockport, N. Y.
Ellithorpe Garrett Mansfield		Barberton, Ohio
Lowell Joseph Mantle		Kenova, W. Va.
Salome Ellen Marckwardt		Ann Arbor
Axel Marin		Manistique
Roland Howard Marker	E	Toledo, Ohio
Homer Roberts Marson	M	Marcy, N. Y.
John Edward Marson	M	Marcy, N. Y.
Fritz George Marsteller		Schmalkalden, Germany
Harry Martens	Mar	Richland
Edmund Warren Marth	M	Rochester, N. Y.
Ira Emmet Martin	Ch	Royal Oak
Alois Louis Martinek	E	Detroit
Alfred Carl Marwinske		Saginaw
Roscoe John Mason	C	Mount Clemens
Wendell Earle Mason		Petoskey
William Gardner Mason		Detroit
Eder Charles Lloyd Matthews	C	Petoskey
Carl Fredrick Mayer	Mar	Cleveland, Ohio
Walter Austin Maynard	E	Kingston
Forrest Lewis Mead	C	Kalamazoo
Merle Kimberly Mead	C	Erie, Pa.
Roy Searles Mead	E	Cleveland, Ohio
Joseph Frederick Meade	M	Eden Center, N. Y.
Robert Marshall Meehan	M	Battle Creek
Julius Meisenzahl	M	Detroit
Harold Nathan Mendelson		Hillman
Morris Mendelson		Detroit
Edgar Warren Meranda	C	Richmond, Ind.
Ramon Esquivel Merino	C	Santiago, Chile

Aloysius Joseph Merkel		Chelsea
Glenn William Merritt		Jackson
Rex Lawrence Mersereau	M	La Grange, Ill.
Edward Fred Metz	C	Buffalo, N. Y.
Martin George Meyers	E	Houghton
Leigh Benjamin Middleditch	M	Detroit
Edward Anderson Middleton	M	Aberdeen, Wash.
Jerome John Mieldazis	C	Shenandoah, Pa.
Loyal Ross Milburn	E	Detroit
Alex Miller		Cleveland, Ohio
Ernest Malvern Miller	C	Northampton, Mass.
Octacilio Miranda	E	Rio de Janeiro, Brazil
Donald Knight Mirrielees		Montclair, N. J.
Carl Rudolph Misch	M	Port Huron
Harold Johnson Mitchell		Milan
Douglas Clark Mittelsdorf	E	South Orange, N. J.
Kenneth Hilton Monroe	Mar	Detroit
Harry Evans Montelius	E	Circleville, Ohio
Lyman Earl Moody	S	Detroit
James Lester Mooney	M	Pittsburg, Pa.
William Francy Mooney	Ch	Toronto, Ohio
James Maxwell Moore		Pittsburg, Pa.
Neil Allan Moore		Erie, Pa.
Ralph Sanford Moore	M	Washington, D. C.
Robert Stanley Moore	Ch	Sault Ste. Marie
Whitley Benjamin Moore	M	Coldwater
Dwight Gerald Moorhead	M	Cleveland, Ohio
Vicente Mario Morales	Ch	Utuado, P. R.
Stanley William Morehouse		Utica, N. Y.
Alfred George Morency	M	Sturgis
James Currie Morison	M	Memphis, Tenn.
Henry Morrison		Calumet
Harvey Worsdell Morrow	Ch	Oak Park, Ill.
Charles Hosmer Morse, 3d		Chicago, Ill.
Axel Gunnar Mortenson	Ch	Detroit
Guido Carl Mosig	C	Enid, Okla.
Arthur Douglass Mott, Jr.	C	Oak Park, Ill.
Clarence Arthur Moulthrap		Bay City
Bruce Sherman Moulton		Ionia
Federico Louis Mourglier		Buenos Aires, Argentina
Wilbur Dorsey Mudge		Toledo, Ohio
Arthur Herman Müller	M	Roswell, New Mexico
Christian Rudolph Müller	M	Detroit
Raymond Andrew Munro	E	Ann Arbor
Arthur Jebson Munson	M	Clinton, Iowa
John Mitchell Munson	S	Tacoma, Wash.
Elmer George Munz	M	Detroit
Edward Michael Murphy	Mar	Cleveland, Ohio
Carl Frank Myers	E	Herkimer, N. Y.
Leon Charles Myers	M	Battle Creek
John Ernest Anthony Naegely	Ch	Port Allegany, Pa.
William Hobart Naegely	Ch	Port Allegany, Pa.
Mathew Elmer Nampa	M	Calumet
Thomas Joseph Navin		Detroit
James Hartwell Needham		Ishpeming
Harold Gemmell Neelans		Hazardville, Conn.
Earl Chester Neff		Royal Oak
Julius Abe Negin	Ch	Cleveland, Ohio
Erwin Jacob Nesper		Toledo, Ohio
Frank R. Nethaway	Ch	Carland
Milton Anthony Netter	M	Toledo, Ohio
Harry Elford Nettleton		Alton, Ill.

John Waldo Neumann	M	Detroit
Alfred Thomas Newbold	E	Flint
Harold Fay Newcomer	C	Charlotte
James Francis Newell	E	Yale
Dudley Newton		Detroit
Ralph William Newton	C	Sanford
Maurice Nicholls	Mar	Pittsburg, Pa.
Alan La Mott Nichols	M	Saint Paul, Minn.
Dudley Alfred Nichols	E	Wapakoneta, Ohio
George Leslie Nicklin	M	Franklin, Pa.
Ray Walter Niles	E	Croswell
Maurice Ralph Norcop		El Paso, Texas
†Simon Thomas Norlock, *a*		Cadillac
Earl Edward Norman	E	Ann Arbor
Cecil Albert Norton	Ch	Flint
Elmo Bruce Norton		Arcade, N. Y.
Edward Leo Nugent	M	Ionia, N. Y.
Macquorn Secor Nuttall		Manistee
Carl Rudolph Nyman	M	Ironwood
James Joseph O'Kane		Ann Arbor
George Edward Oles		Hammond
Aage Emanuel Olsen		Detroit
LaVerne Olsen	M	Manistee
John Emmanuel Olson	S	Detroit
John Willis Oltman		Oberlin, Ohio
Stuart Opdyke	Ch	Pontiac
Arthur Louis Oppenheimer	C	Grand Rapids
Robert James Orr	Ch	Crafton, Pa.
John Vernon Orris		Springfield, Ont.
Stanislas Ludomir Orzechowski	M	Mogilnica, Poland
Burr Kenneth Osborn		Ann Arbor
Fowler Loud Osborne	Ch	Ann Arbor
Charles Y. Osburn	E	Sewickley, Pa.
J. Hawley Otis	M	Kibbie
Warren Williams Otis	Ch	Kendallville, Ind.
Joseph Herbert Paden	S	Benton Harbor
Leslie Whitsit Page	C	Chicago, Ill.
Samuel Towle Page	Ch	Ann Arbor
Thomas Foster Paisley	Ch	Dubuque, Ia.
Peter Tony Pala	S	Detroit
Raymond James Palmer	E	Oxford
Anthony Charles Panfil	M	Grand Rapids
Reginald David Pappe	E	Salt Lake City, Utah
Newton Warren Paquette	C	Toledo, Ohio
Ralph Hobart Paquette	C	Toledo, Ohio
Celestino Perez Paredes		Benzonia
DeEstine Hilon Parker	E	Blissfield
Thomas Reynolds Parkhurst	Ch	Chicago, Ill.
Carl Wilson Parkin	M	Elgin, Ill.
Harold Hills Parks	M	Lander, Wyo.
Robert Chester Parks	E	Birmingham
William Parr	C	Royal Oak
Le Grand Washington Parrish		Scranton, Pa.
Millis Vincent Parshall		Chesaning
Frederick William Parsons		Elmira, N. Y.
Louis Edgar Partch	M	Des Moines, Ia.
Angell Barber Pastor	C	Rochester, N. Y.
Lyle Bowie Patterson		Saint Marys, Ont.
Meade Winthrop Patterson	Ch	Lockport, N. Y.
Earl Clair Payne	M	Des Moines, Ia.
Howard Wallace Peacock		Barker, N. Y.
†Chester Crawford Pearce, *a*	E	Marquette

Frank DeWitt Pease		Detroit
Anastas Demetrios Pelikas	C	Corytza, Greece
Charles Thomas Perkins	M	Saint Joseph
Donald Lee Perkins	M	Ann Arbor
John Russell Perkins	M	Norway
Fred Karl Petermann	E	Laurium
Charles Albert Peters, Jr.	C	Washington, D. C.
Lawrence Edward Peterson	Ch	Richmond, Ind.
George Rollo Petrie	E	Cadillac
Irwin William Petrie	C	Herkimer, N. Y.
Arthur Lewellyn Pettegrew		Grand Rapids
Lewis Howard Pettibone	C	Corunna
Elmore Shaw Pettyjohn	C	Detroit
Justin Joseph Pfeiffer		Corning, N. Y.
Kenneth Gregory Phelps		Ann Arbor
Robert Walter Phelps		Cleveland, Ohio
†Otto Karl Philipp, *g*	C	Kalamazoo
†Artemas Gray Pickard, *a*	C	Fort Wayne, Ind.
Josué Ramos Reina Picon	M	Lima, Peru
Hodgson Shermon Pierce		Bay City
Wallace James Piggott	M	Cleveland, Ohio
Michel George Pimenides		Constantinople, Turkey
Stanley Iven Pinel	C	Kalamazoo
David Wills Pinkerton	M	Toledo, Ohio
Dudley Woodbridge Pitkin	M	Benton Harbor
†Lawrence Henry Planz, *p*		Marlette
Hugo Walter Plath	M	Detroit
Louis Arthur Plath		Detroit
Michael Plaut		Cincinnati, Ohio
Otto Phillip August Pobanz	M	Sebewaing
James Randal Pollock	C	Decatur
Carl Washburn Porter	Mar	Clarendon, Va.
Harry Thomas Porter	M	Conneaut, Ohio
Kenneth Lee Porter	Mar	Dowagiac
Samuel Doak Porter	C	Blissfield
Warren LeRoy Porter	E	Saint Ignace
John Ripley Poss		Detroit
Ernest Frank Potter	C	Niagara Falls, N. Y.
William Henry Potter		Alpena
John Edmond Powell	E	Richmond, Ky.
Clarence John Pratt	C	Battle Creek
Stephen Gay Pratt	Ch	Cleveland, Ohio
Harold Carlton Preble	Mar	Merrimac, Mass.
Garson Prenner	C	Rochester, N. Y.
William Henry Price	C	Ann Arbor
Lester Augustus Pridgeon		Montgomery
Louis Long Pritchard		Three Oaks
Julius Albert Prochazka	Ch	Newark, N. J.
Edwin Kenneth Purchase	M	Detroit
Homer Manley Putnam, Jr.	M	Warren, Pa.
Clarence James Quail	C	Port Huron
Earl Joseph Quest		New Castle, Pa.
Jose Sebastian Quiroga	E	Lima, Peru
D. D. Ralph		Ann Arbor
Roger Spencer Rankin	Ch	Detroit
Lawrence Alfred Ransford	M	Coldwater
Edwin Frederick Rapp	Ch	Buffalo, N. Y.
Louis Abe Rayman		Toledo, Ohio
Earl Edward Raymond	E	Saginaw
Philip Titus Raymond	C	Saginaw
Thatcher William Rea	M	Detroit
Carleton Wight Reade	Ch	Escanaba

Burney Virgel Reany	E	Marquette
Frank Maynard Reed		Clearfield, Pa.
Chester Kenneth Reichert	M	Erie, Pa.
Clyde Harold Reid		Birmingham
†James Morton Reid, *g*	C	Ann Arbor
Carl Vincent Reilly	Ch	Youngstown, Ohio
José Maria Reina, Jr.		Fegucigalpa, Honduras
Howard Wilbert Reindel	C	Detroit
Theodore Henry Reinhardt	E	Detroit
Max Hobart Reniger		Marshall
Thomas Robert Renwick	E	Rockford
Arnold Ryther Reynolds	C	Croswell
Edward Ormond Reynolds	M	Jackson
Floyd Otto Reynolds	M	Croswell
Harold Pnoper Reynolds		Factoryville, Pa.
William Murdoch Riach	Ch	Chicago, Ill.
Clarence Leroy Rice	Ch	South Haven
Harvey Martin Rice	M	Caro
Emlyn Rosser Richards	S	Alliance, Ohio
Ivor Rosser Richards	S	Alliance, Ohio
Lester Jay Richards	M	Coopersville
Wesley Arthur Richards	Ch	Waterbury, Conn.
Arthur Lorne Richardson	Mar	Aylmer, Ont.
Frank Ensign Richardson	E	Battle Creek
Herbert Harold Richardson		Flint
Hugo Adolph Rieger	C	Rogers City
Karl Frederick Rindelhardt		London, Ont.
Oliver Franklin Ringsmuth	E	Wakefield
Karl Ritscher	S	Moorburg, Germany
†Thomas Brackett Robertson, *a*		Chevy Chase, Md.
Alfred Henry Robinson	Ch	Michigan City, Ind.
Edmund Sanford Robinson	C	Detroit
Harold Franklin Robinson	C	Detroit
Max Gain Robinson	E	Chicago, Ill.
Raymond Burdet Robinson	C	Friendship, N. Y.
Victor Harold Rocho		Detroit
George Frederick Roehrig, Jr.	C	Denver, Colo.
Arthur David Roese	C	Mount Clemens
Harold Charles Roeser	E	Saginaw
George Earl Rogers, Jr.		Grand Rapids
Walter Sill Rogers	M	Franklin, Pa.
William Romanoff	Ch	Toledo, Ohio
Max Ellinger Rood	C	Flint
Adrian Cornelius Roosenraad	E	Zeeland
Benjamin Rose		Cleveland, Ohio
Reginald Warwick Rose	C	Detroit
Jacob Naphtali Rosenthal	C	Los Angeles, Cal.
Simon Roth	S	Alliance, Ohio
James Henry Rough	C	Negaunee
William Howard Rowan	E	Muskegon
Alvin Osborne Rowe	E	Houghton
Kenneth Humfeldt Rowells	E	Escanaba
R. Gayle Royce	Ch	Jackson
Carl Herman Ruch	C	Toledo, Ohio
Marcus George Ruppe	Ch	Hancock
Charles Pratt Russell	M	Battle Creek
Thomas Porter Russell		Grand Rapids
Walter Clair Russell	C	Litchfield
Wilford Bates Russell		Litchfield
Wilbur Oscar Rust		Ithaca, N. Y.
Harold Rye	Ch	Sault Ste. Marie
Carlton Richard Sabin	C	Sault Ste. Marie

John George Sadtler	Mar	Cleveland, Ohio
Julius Reginald St. Clair	M	Duluth, Minn.
Henry Milburn Salisbury	Ch	Battle Creek
Benno Franklin Salomon	Ch	Marcellus
Irwin Tasker Sanborn		Detroit
Raymond Floyd Sanderhoff	C	Owosso
Floyd Schager Sanders	Ch	Traverse City
Sterling Skillman Sanford	M	Mount Clemens
Perry Comfort Satterthwaite	C	Tecumseh
Carl Edwin Sauer		Ann Arbor
Lane Dashiell Saunders		Detroit
Fred Morgan Sawin	S	Ann Arbor
Charles Edwin Sawyer, Jr.	S	Marshall
Laurence Sayner	S	Ann Arbor
Elmer Clarence Schacht	C	Sandusky, Ohio
Edward Merl Schaffter	C	Detroit
Nathan Harry Schermer	Ch	Wyandotte
†Herbert Eugene Schimmel, *a*		Faribault, Minn.
Louis Joseph Schindler		Toledo, Ohio
Michael Schmalzel, Jr.	E	Laurium
†Herbert Judson Schlee, *a*		Ann Arbor
John Anthony Schmook	M	Springfield, Mo.
Jacob Lewis Schnitz	C	Benton Harbor
Louis Schoenfeld		Northampton, Mass.
William John Schoepfle	M	Sandusky, Ohio
Louis William Schoon, Jr.	Ch	Holland
William Nicholas Schuler	Ch	Spearfish, S. Dak.
Arthur August Schupp	M	Saginaw
Frederick Tackels Schutt	M	Mount Clemens
Franz George Schwalbe		Toledo, Ohio
John Michael Schwarz	E	Holland
Francis Charles Scott	S	San Antonio, N. Mex.
Otto Charles Scott	S	Sault Ste. Marie
Ralph Samuel Scott	C	Chicago, Ill.
Richard Cushman Scott	E	Ann Arbor
Harold Ralph Scovill	C	Hudson
Waldo Lorin Scovill		Hudson
Carleton Spear Scribner	M	Toledo, Ohio
William Warner Seabury	M	Ann Arbor
Leon Arthur Sears	E	Sturgis
William Sears	S	Grand Rapids
Earl Ray Seavolt		Ann Arbor
Laurence John Sedelmeyer, Jr.		North East, Pa.
Herman August Seeger	Mar	Toledo, Ohio
†William Herman Seff, *a*		Newark, N. J.
Frederick August Sellke	E	Hawks
Frederic William Sevin	M	Erie, Pa.
Robert Edward Sevin	M	Erie, Pa.
Monroe Shakespeare		Kalamazoo
James Harrison Sharpe	M	Sault Ste. Marie
Katheryn Henderson Shay	M	Harbor Springs
Francis Ignatius Sheahan	M	Detroit
Thomas Walter Sheahan, A.B. *University of Detroit*	M	Detroit
Howard William Sheldon	Ch	Olean, N. Y.
Willard Freeman Shephard		Saint Clair
Israel Herman Sher	Ch	Ironwood
Demetrius Sherotsky		New York, N. Y.
Raymond Gordon Sherrick		Canton, Ohio
James Wendell Shew	E	Monroe
George Earl Shimel	E	Grand Rapids
Clifford Lawrence Shipman		Fowler, Ind.

Leonard Grant Shirk		Lemmon, S. Dak.
Claude Melville Shurtleff		Cross Village
Ward Benjamin Sickler	C	Port Huron
Robert Gebhardt Sidnell		Cleveland, Ohio
Herbert Brevillier Siegel	Ch	Erie, Pa.
Carl Frederick Herman Siekmann, Jr.		Buffalo, N. Y.
John Frank Silhavy, Jr.		Port Huron
Philip Silverman	Ch	Brooklyn, N. Y.
Dorothy Tilden Hanchett Simons	C	Ann Arbor
Seymour Broudy Simons	M	Detroit
Howard Woodworth Simpson	M	Detroit
Thomas Charles Simpson	Ch	Port Huron
Homer Arthur Size		Bronson
Clarence Oramel Skinner	C	Lansing
Joseph Walter Skutecki	E	Detroit
Howard Willard Slack	C	Jackson
†Chester Baker Slawson, *a*		Greenville
Kenneth James Sloan	M	Cleveland, Ohio
Jackson Wyman Smart	Ch	Chicago, Ill.
Donald Gavin Smellie	M	Ypsilanti
Alton Elbridge Smith		Davison
Cedric Alan Smith	M	Wilmette, Ill.
†Donald Abram Smith, *g*	C	Algonac
Edison Chester Smith		Niagara Falls, N. Y.
Gordon Smith	M	Toledo, Ohio
Hobart Franklin Smith		Detroit
John Robert Smith	E	Duluth, Minn.
Landis Shaw Smith	E	Geneseo, N. Y.
Lester Leo Smith	C	Rochester
Norman Joseph Smith		Saginaw
Richard Davis Smith	E	Culbertson, Mont.
Robert Elgar Laurie Smith	C	Rockville, Md.
Stiles Curtiss Smith	M	Cleveland, Ohio
†Walter Lester Snider, *a*		Holyoke, Mass.
Frederick Birdsall Snook		Detroit
Harold Robert Snow	Ch	Geneseo, Ill.
John Earl Sommers	M	Clifton Springs, N. Y.
Vicente Zaragoza Soto	M	San Juan, P. R.
Edmund Louis Spanagel	E	Canton, Ohio
Clifford Maurice Sparks	M	Jackson
Harry George Sparks	M	Jackson
Norman Reeve Speiden		Washington, D. C.
Raymond Henry Spechk		Ann Arbor
George William Spender	Mar.	Waterbury, Conn.
Charles Joseph Sponable		Fort Plain, N. Y.
Don Allen Sprague	M	Cheboygan
Gale Alton Sprague	M	Charlotte
Frederick Christian Spring	S	Ann Arbor
Donald Mathison Springer	Ch	Youngstown, Ohio
Edward A. Stalker	M	Cheboygan
Gerald Joseph Stanick	C	Saginaw
Clifford Lester Stanley	Mar	Portage, Wash.
Edward J. Stark		Newberry
Ralph Ward Starrett		Montclair, N. J.
Cyril Benjamin Starring	C	Rochester
Lyman Clayton Steele		Belding
Paul Wallace Steelsmith	M	Detroit
Fred Edward Steinbach	Ch	Ossineke
Herman Lewis Steinbach	E	Ossineke
Varnum Bert Steinbaugh		Ann Arbor
Russell H. Steininger	E	Adrian
Nelson Cornelius Steketee	E	Holland

Clarence Albert Stemmer		Utica, N. Y.
Bernhard August Stenberg	C	Chicago, Ill.
Harold Mitchell Stephen	Mar	Detroit
Paton Carlyle Stephen	M	Syracuse, N. Y.
Laurence Ernest Stephenson	Mar	Toledo, Ohio
Charles Orrin Stetler		Jackson
James Harold Stevens	E	Ann Arbor
George Alfred Stevenson	M	Ann Arbor
Bedell Porter Stewart	C	Dearborn
John Stewart	Mar	Bremerton, Wash.
Robert Leroy Storrer	C	Owosso
Louis Henry Stott	E	Manistee
Otto Willett Strachan	E	Muir
Austin Taggart Streeper	M	Norristown, Pa.
Theodore Emerson Street		Cleveland, Ohio
Robert Galbraith Strong		Pittsburg, Kans.
Edward Grant Stuart	Ch	Akron, Ohio
William George Stuefer	E	West Point, Nebr.
Clarence Homer Stump	Ch	Armada
Grant Barkley Sturgis	M	Flint
Marian L. Sturgis	C	Fowler
†Fredrick August Sturm, *a*		Three Oaks
Kameichi Sugiyama	M	Hiroshima, Japan
Leo Daniel Sullivan		Detroit
William Herbert Suttle		Cleveland, Ohio
Ray August Swanson		Cherokee, Ia.
Clark Swartfiguer	Mar	Ann Arbor
Ralph Swift		Detroit
Frederick George Earnest Tadlock		Biggsville, Ill.
Harold Earnest Taft	C	Ann Arbor
Ralph Stickney Taggart, B.S.	C	Delaware, Ohio
Robert Razey Tanner	Ch	Corning, N. Y.
Edward Sterling Tassey		McKeesport, Pa.
Abraham Harry Tassler		Hartford, Conn.
Herbert Lawrence Tatham		Saginaw
Leo Tattersall	M	Henderson
Harold Anderson Taylor	C	Rochester
Henry Taylor	Mar	Savannah, Ga.
Howard Story Taylor	Ch	Owosso
Paul Bowdish Taylor	M	Schenectady, N. Y.
Ralph Brookins Taylor		Pavilion, N. Y.
Russell Curtis Taylor		New Dorp, N. Y.
Zaven Nigoghos Tenekejian	C	Harpoot, Armenia
Arthur Henry Tessin		Hemlock
Frederick John Thieme, Jr.	Ch	Fort Wayne, Ind.
Edmund Ashley Thomas	Ch	Detroit
Philip Edward Thomas	E	Pittsford, N. Y.
Walter Dwight Thomas		East Cleveland, Ohio
Frank Barton Thompson	M	Anchorage, Ky.
Henry Rich Thompson	M	Ishpeming
Stanley Jay Thompson	M	Hubbell
Lansing Wilt Thoms	E	Detroit
Leonard Jacque Thorsch		Chicago, Ill.
Norman Thrift Thurston	M	Toledo, Ohio
Otto Fredrich Tietjen	M	Cole Camp, Mo.
Philip Sheridan Titus	M	Earlville, N. Y.
Tom Tobey	M	North Newport, N. H.
Stanley Perry Tobias	M	Dowagiac
Clarence Jory Tobin	Ch	Calumet
Harvey J. Toles		Rochester
Charles Lawrence Tomlinson	S	Dayton, Ohio
Emery Taylor Toogood		Grand Rapids

Charles Edward Toole	S	Geneseo, N. Y.
Robert George Towner	C	Byron Centre
Joseph Vincent Tracy		Brighton, Mass.
†Sylvester Leonard Traub, *a*		Cleveland, Ohio
Samuel William Traylor, Jr.		Allentown, Pa.
Howard Orville Trerice	Mar	Detroit
John Boyd Trimble, Jr.	M	Westfield, N. J.
Constantine Damianos Tripolitis	Mar	Cos, Greece
William Scott Trowbridge		Pittsburg, Pa.
Walter Frederick Tschaeche		Detroit
Howard Downing Tubbs		Seeley Creek, N. Y.
Charles Francis Turner		Litchfield, Ohio
Urban Victor Turner	M	Wilkinsburg, Pa.
Willis H. Tuttle	E	Ann Arbor
George Mickle Unsworth	E	Calumet
Richard L. VanAlstyne		Scales Mound, Ill.
Frederick Camille Van Brunt	E	Saint Joseph, Mo.
Jackson W. Van Brunt	C	Saginaw
Max VandeGreyn	C	Grand Rapids
Harold den Bleyker Van Deman		Toledo, Ohio
William Joseph Vandermuelen	M	Grand Rapids
Charles Theron Van Dusen	M	Detroit
Cornelius Van Eenenaam	C	Zeeland
Eugene Robinson Vernou		Ann Arbor
Peter Verschoor	E	Grand Rapids
Paul Amos Vickers	C	Kansas City, Mo.
Russell Dudley Vivian		Laurium
Herbert Herman Volbrath		Wellsville, N. Y.
Ralph Collamore Voorhees	M	Ypsilanti
Robert Wiltsie Wadhams	C	Pittsford, N. Y.
Milton Fred Wagnitz	C	Detroit
Vernon David Waite	E	Hulburton, N. Y.
Virgil Henry Waite		Elyria, Ohio
Frank Britton Waldron		Saint Louis, Mo.
John Frame Walker	C	Youngstown, Ohio
Karl Ford Walker	M	Washington, D. C.
Oakley Cutler Walker	M	Worcester, Mass.
Sidney Lewis Walker		Jackson
Fern Porter Walter	C	Ann Arbor
George Walterhouse	C	Bremen, Ind.
Donald Silverthorne Ward	Mar	Lockport, N. Y.
Henry Tibbels Ward		Sioux City, Iowa
Alfred Bennett Wareham		Laurium
Cecil Warnacutt		Vollmer, Idaho
Charles Stewart Warner		Detroit
Wilbur Wesley Warner	E	Howell
Francis Charles Warren	E	Charlotte
*Paul Wheeler Warriner		Saginaw
Harold Waterbury	M	Ann Arbor
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William Lee Watson	Ch	Brownwood, Tex.
Wilmer Burton Weathers		Indianapolis, Ind.
Charles Franklin Weaver	Ch	Mansfield, Ohio
Forrest Edward Weber		Detroit
Max Eugene Webster	C	Peoria, Ill.
Earl Richard Weeber		Grand Rapids
Milton Jerome Weed	M	Fennville
Harry William Weinerman	Ch	Brooklyn, N. Y.
Henry Weinstein	C	Goshen, Ind.

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* Died March 5, 1917.

Robert Weiss	Ch	Wyandotte
William Hazen Welch, Jr.		Romeo
Edward Smith Wellock		Harbor Beach
Carlton Edwin Wells	C	Dallas, Tex.
Otto George Wendel	M	Gowanda, N. Y.
Adolph William Frederick Wendler	Ch	Mount Clemens
Earl William Werner	S	Grand Rapids
Richard Ferdinand Weske	C	New London, Conn.
Donald Corbly West	E	Emporia, Kans.
John Albert West		Cincinnati, Ohio
Ralph Melville West	C	Osnaburg, Ohio
Harry Greenwood Westbrook		Battle Creek
Brayton William Westcott		Kingsville, Ont.
Archie Bruce Weston	M	Sault Ste. Marie
William Frederic Wetmore	E	Jonesville
Pierce Albert Weyl		Sandusky, Ohio
James Lawrence Whalen	C	Savannah, N. Y.
Bradner Dundy Wheeler		Washington, D. C.
Eugene Laurens Wheeler		Pawhuska, Okla.
Laurence Edwin Whitaker	C	Detroit
Russell Keith Whitcher		Jackson
Albert William White	S	Detroit
Duane Kidder White		Alva, Okla.
Robert Edwin Ewer White	M	Grand Rapids
Russell Grey White	E	Central Lake
George Ganiard Whitney		Flint
John Henry Whitney	E	Mount Clemens
Harry Hudson Whittingham	C	Detroit
James Sterling Wickwire	M	Jackson
Edward Everett Hale Wilde	C	Detroit
Howard DeFord Willard-Jones	Ch	Port Clinton, Ohio
Conrad Segge Pantzerhielm Williams		Ann Arbor
Earl Spencer Williams		Huntley, Ill.
Elmer Thomas Williams		Plymouth, Pa.
Herbert John Williamson	S	Newport News, Va.
Kenneth Albert Willson	E	Detroit
Charles Oscar Wilson		Muskegon
David Mathias Wilson	C	Belleville
Philip Johnson Wilson, Jr.	Ch	Detroit
Llewellyn Kempf Winans	C	Jackson
Franklin Robert Winch	C	Dayton, Ohio
Harold Brooks Winchell	E	Ann Arbor
Truman Sharp Wise		Frankfort, Ind.
Ignatius Wojtaszak	C	Ludington
Saling Henry Wolfe	Mar	Chicago, Ill.
Kei Tit Wong	Ch	Canton, China
Ray Dot Wonsey		Courtright, Ont.
David Pangmon Wood	Mar	Chicago, Ill.
Charles Henry Woodward	C	Detroit
Richard Morton Woodward	C	Fitchburg, Mass.
Graydon Read Woodworth		Delevan, N. Y.
Byron Thomas Woolfington	S	Detroit
Henry Charles Worfel	C	Grand Rapids
George Work, Jr.		Aspen, Colo.
Harry Chaffee Workman		Highland Park
Donald Dunn Wright		Leslie
Ferris Giles Wright	Ch	Coldwater
Roscoe Charles Wright		Rochester, N. Y.
Seitaro Yamashita		Tokyo, Japan
Fang Yen	C	Huchow, China
Norman Stoll Yost	M	Ann Arbor
Edward Young	C	Sault Ste. Marie
Kenneth Lincoln Young	C	Hingham, Mass.

Wing Tong Young	C	Canton, China
Lewis Frederic Zahn		Detroit
Carlos Alberto Zanelli	C	Casilla, Chile
Lino Eduardo Zapata	E	Mexico City, Mex.
Franz Perrine Zimmerli	Ch	Lyons, N. Y.
William Frederick Zingg	Ch	Bay City
Elmer Peters Zink	Ch	Flint
Homer Dean Zipp	M	Petoskey
Cecil Edwin Zwickey	E	Ann Arbor
Sidney Clifford Zylstra	Ch	Sault Ste. Marie

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Ervin Bailey	AII	Ann Arbor
Clarence Albert Baske	AE	Lansing
Howard Harold Battin	AI	Marinette, Wis.
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Harvey John Bisbee	AI	Moline
Herman Blumberg	AI	Detroit
Philip Brezner	S	Detroit
Walter Beckwith Brown	AI	Dayton, Ohio
Moses McElroy Brundidge	AI	Okmulgee, Okla.
Newton Stewart Burnham	AII	Detroit
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Oscar Henry Cartwright	AI	Detroit
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†Marian Underwood Christie, *a*	AII	Sewaren, N. J.
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Clifford Henry Creager	AII	Grand Rapids
Arthur Roy Crow	AII	Alpena
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John Alger Emanuel Dahlstrom	AI	Grand Rapids
Harold Dalziel Davenport	AII	Grand Rapids
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Raymond Mahler Ditmire	AI	South Bend, Ind.
Walter John Dixon	AII	Cleveland, Ohio
Anton Joseph Dohmen, Jr.	AI	Milwaukee, Wis.
Bryant Wesley Donaldson	AI	Detroit
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Margaret Engels		Ann Arbor
George Earl Fleming	S	Grand Rapids
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Harold Ott Fullerton	AI	Sharon, Pa.
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Elroy Arthur Giroux	S	Momence, Ill.
Howard Gray	AI	Calumet
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John Leon Groner	AI	Pontiac
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Henry Adolf Hagen	AII	Detroit
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Maurice Eugene Hammond	AE	Pontiac
Chester Gail Henninger	AE	Akron, Ohio
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Morton Hopkins Ingall	AI	Morenci
Emil Gerhardt Jehle	AII	Detroit
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Paul Louis Kamper	AII	Detroit
Johnson Darby Kenyon	AII	Wauseon, Ohio
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Joseph James Kucera	AII	Detroit
Charles Jean La Marre	AE	Alpena
Lawrence William Lamb		Fennville
Russell Goodwin Larke	AI	Niagara Falls, N. Y.
Ho Lee	AE	Honan, China
Evangeline Neal Lewis	AII	Detroit
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John Henry Lindhorst	AI	Cleveland, Ohio
Daniel August Lindow	AE	Detroit
George Rolland Long	AE	Detroit
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Thomas Stephen MacDonnell	S	Arlington, N. Y.
William Wesley McKelvey, Jr.	AII	Youngstown, Ohio
Philip Brooks Maher	AII	Kenilworth, Ill.
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Lawrence Stannard Martz	AI	Kansas City, Mo.
Arnold Alden Merica	AE	Kendallville, Ind.
Robert Franklin Miller		Jackson
Stanley Thompson Mills, B.C.E.	S	Ann Arbor
Harold Morton	AII	Hadley
Clayton Carl Mulholland	S	Saginaw
Cecil Arthur Northrup	S	Grand Rapids
Charles Martin Norton	AI	Grand Rapids
Walter Michael Nugent	AI	Ionia, N. Y.
Wallace Milo Osborn	AI	Hastings
David Sheldon Paden	AI	Evanston, Ill.
John Henry Page	AI	Ann Arbor
De Forest Phillips	AE	Wellington, Ohio
John Henry Pielemeier	AII	Chelsea
†Samuel Popkins, *a*		Detroit
Gorton Francis Price	AI	Niles
Earl William Publow	AE	Gaylord
Ogden Mill Rathert	AI	Indianapolis, Ind.

Laurence Tucker Ray	AII	Ann Arbor
Edwin Morton Read	AII	Brockport, N. Y.
Warren Lester Rindge	AI	Grand Rapids
Nathaniel Robbins, Jr.	AII	Grand Haven
Charles Crissman Rose	AI	Johnstown, Pa.
Glenn Erastus Routier	AE	Detroit
Elliot Forest Ruihley	AI	Archbold, Ohio
Robert Linwood Satterwhite, Jr.	AII	Franklin, Pa.
Gilbert Pierson Schafer	AI	Flint
Herbert Dale Schmitz	AI	Kansas City, Mo.
Albert Eugene Schoerger	AI	Port Clinton, Ohio
John Thomas Schraffenberger		Middletown, Ohio
Fred Otto Schroeder	AI	Ann Arbor
Elmer Gould Schubert	AE	Detroit
Ward Shannon	AI	Bath, N. Y.
Arthur Leroy Shepard	AI	Lima, Ohio
Chester Asa Sirrine	AI	Allegan
Helen Agnes Smith	AII	Detroit
Mortimer Levant Smith	AII	Detroit
†Isabel Pearl Snelgrove, *g*	S	Ann Arbor
John Emil Somppi	AE	Ironwood
Orrin Furse Stone	AI	Pontiac
William Henry Stone		Detroit
Eugene De Golyer Straight	AI	Greenville
Frederick Gustavus Strauss	AI	Saint Clair
Carl Westly Streufert	AII	Detroit
Charles James Sullivan, A.B. *University of Detroit*	AI	Detroit
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Frank Harold Taylor		South Lyon
James Gradon Taylor	AE	Independence, Mo.
James Douglas Thorburn	AII	Highland Park
†Alfred Bernard Trudeau, *a*		Greenland
Ernest Hugo Trysell	AI	Ann Arbor
Gilbert Stanley Underwood	AII	Detroit
Mary Smith Underwood	AII	Detroit
Adam Randall Wagner	AII	Colon
Warren Henry Walker	AE	Muskogee, Okla.
Ralph Holmes Ward	AII	Hays, Kans.
Richard Woolsey Ware	AE	Grand Rapids
Samuel Gross Wiener	AI	Shreveport, La.
†Clair De Camp Wilson, *a*	AII	Jackson
†Unity Fletcher Wilson, B.S., *g* *University of Chicago*	AII	Ann Arbor
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Lloyd Wilson Worden	AI	Lowell
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SOBEI IDE, M.D.
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THEOPHIL RAPHAEL, A.M.
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BESSIE A. PARSONS
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ROLLAN W. KRAFT, B.S., M.D.
EDWIN R. SMITH, A.B.

STUDENTS*

RESIDENT PRACTITIONERS

LeRoy Newton Fleming, A.B., *Miami University, M.D., Johns Hopkins University*	Portsmouth, Ohio
Nobuyuki Fukase, M.D., *Kanazawa Medical College, Japan*	Hakodate, Japan
Naravan Subrao Hardikar, M.C.P.S., *College of Physicians and Surgeons, Calcutta,* M.S. (P.H.)	Bombay, India
George Arthur Seybold, M.D.	Jackson
Carl Cleghorn Warden, Ph.B., M.D.	Ann Arbor
Herbert Tock White, M.D.	New Lathrop

FOURTH YEAR STUDENTS

Charles May Newman Anderson, B.S.	Nezperce, Idaho
Alfred Leston Arnold, Jr.	Owosso
Myron George Becker, Jr., B.S.	Benton Harbor

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*A dagger (†) preceding a student's name signifies that he also pursued studies, for the whole or part of the year, in another School or College of the University, indicated by an italic letter following the name, to-wit: *g,* Graduate School; *a,* College of Literature, Science, and the Arts; *e,* College of Engineering; *ea,* College of Architecture; *l,* Law School; *p,* College of Pharmacy; *h,* Homoeopathic Medical School; *d,* College of Dental Surgery. The letter following the name (without the dagger), indicates that the student is pursuing a combined curriculum, leading to a degree in each of the two.

Clarence Austen Berge, A.B., *University of Washington*	Davenport, Wash.
Margaret Helen Bigby, A.B., *University of South Carolina*	Columbia, S. C.
Max A. Blumer, B.S.	Pittsburg, Pa.
Warren Conrad Breidenbach, B.S.	Piqua, Ohio
John Thomas Burns, B.L., *Notre Dame University*	Kalamazoo
Henrietta Anne Calhoun, B.S., *University of Illinois, A.M., ibid*	Ann Arbor
Jacob Harold Chalat, B.S.	Detroit
Herman Harrison Cole, B.S.	Springfield, Ill.
Leon Basil Cowen, B.S.	Harrisburg, Pa.
Roland Spuhler Cron, B.S.	Manistee
David Christian Eisele, B.S.	Albany, N. Y.
Mary Josephine Erickson, B.S.	Hancock
Lynn Adelbert Ferguson, B.S.	Sparta
Walter Abram Fort, B.S.	Centerville
August Ernst Gehrke, B.S.	Highland Park
Norris William Gillette, A.B., *Harvard University*	Toledo, Ohio
William Stephen Gonne, B.S.	Detroit
John Black Grant, A.B., *Acadia College*	Halifax, Nova Scotia
Jack Harry Hamill, B.S.	Bolivar, Pa.
Austin William Heine, B.S.	Mount Clemens
Benjamin George Holtom	Battle Creek
Jack Walker Jones, A.B., *Mercer University*	Canton, Ga.
Rolla George Karshner, B.S.	Big Rapids
Sarkis Hovannes Kashkashian	Gurun, Armenia
Harther Lewis Keim, B.S.	Steelton, Pa.
Harold Lang Kennedy, B.S.	Spokane, Wash.
Karm Chandra Kerwell	Punjah, India
Garabed Hagop Koumjian (Kooyumjian), B.S.	Petoskey
Louis Aaron Kustin, B.S.	Cleveland, Ohio
Roy Lee Laird, B.S.	Spokane, Wash.
Bertil Thomelius Larson	Crystall Falls
Joseph Stanley Leszynski	Detroit
Tsoong Ching Lieu, B.S.	Foochow, China
Maurice Clock Loree	Ithaca
George McClure, B.S.	Calumet
Robert Bruce Macduff	Detroit
Thomas Meriwether Marks	Lexington, Ky.
Hugh Raymond Meyer, B.S.	Ann Arbor
Vasil Prodromos Moisides, A.B., *Anatolia College*	Detroit
John Hulst Müller, B.S.	Grand Rapids
Raymond James Nutting, B.S., *Ohio University*	Reinersville, Ohio
Russell Aaron Alger Oldfield, B.S.	Bay City
Russell Henry Oppenheimer, A.B., *Ohio State University*	Fremont, Ohio
Algernon Arthur Palmer	Chelsea
John Ryer Poppen	Athenia, N. J.
Frank Perryn Raiford, A.B., *Lincoln University*	Atlanta, Ga.
Rudolph Herman Ruedemann, B.S.	Albany, N. Y.
James Floyd Runner, B.S.	Grand Rapids
Viola Pevey Russell, A.B., *Vassar College*	Wellesley, Mass.
Edwin Rutherford Scarboro, A.B., *Mercer University*	Tifton, Ga.
William Ira Searles, A.B.	Canandaigua, N. Y.
Loren William Shaffer	Ligonier, Pa.
Bert H. Shepard	Ann Arbor
George Douglas Treadgold	Port Huron
Russell William Ullrich, B.S.	Mount Clemens
Rex Edward VanDuzen, B.S., *Alma College*	Breckenridge
Ralph Marean Vincent, B.S.	Binghamton, N. Y.
Albert DeForest Wickett, B.S.	Mount Pleasant
Pedro Juan Zamora	Aguadilla, P. R.

THIRD YEAR STUDENTS

Floyd McJunkin Allen	Keisters, Pa.
José Alum, A.B.	Arecibo, P. R.
Charles Edward Anderson, B.S.	Ironwood
Govind Venklesh Ankliker, M.C.P.S., *College of Physicians and Surgeons, Calcutta*	Bilgi, India
Donald Kay Bacon, B.S.	Saint Paul, Minn.
Theodore Swift Barnett	Potsdam, N. Y.
Elden Charles Baumgarten, A.B.	Richmond
Paul Webley Beaven, A.B., *University of Rochester*	Rochester, N. Y.
Charles Ancil Bosworth	Paola, Kans.
Clifford Wayne Brainard	Battle Creek
Robert Ellsworth Brown, A.B., *University of Illinois,* M.S. (I.H.)	Danville, Ill.
Laura Agnes Buck, A.B., *Syracuse University*	Naples, N. Y.
Max Ronald Burnell	Flint
George J. Busman, B.S.	Coopersville
Joseph Rogers Darnall	Washington, D. C.
Herbert Daniel Dieterle, A.B.	Ann Arbor
Frank Merle Dryden, A.B., *University of Nebraska*	Battle Creek
Arvid Waldemar Erickson, B.S.	Ironwood
Bert Fellows	Lansing, Iowa
John Frederick Edward Foss, B.S.	Dunkirk, N. Y.
Ralph James Frackelton, B.S.	Fenton
†Helen L. B. Gage, B.S., *g*	Wixom
William John Greenfield, A.B., *Hope College*	Clara City, Minn.
Roy Mark Greenthal, B.S.	Detroit
Glenn Grieve	Fowlerville
Merit Donald Haag, B.S.	Wauseon, Ohio
Robert Joseph Hall	Detroit
Campbell Harvey, A.B.	Detroit
Clyde Knapp Hasley, A.B.	Monroe
Parker Heath	Ann Arbor
George Rudolph Herrmann, B.S.	Fort Wayne, Ind.
†Lynn Arthur Hoag, B.S., *g*	Ann Arbor
Mathias Sylvester Hurth	Watkins, Minn.
Carroll C. Hyde, B.S., *Alma College*	Addison
Charles Raymond Illick, A.B., *Taylor University*	Hulmeville, Pa.
Herbert Alfred Judson, A.B., *Park College*	Hanchow, China
Rockwell M. Kempton	North Adams
Maurice Joel Lieberthal	Ironwood
Harry Gustave Lundgren	Ironwood
William Kerr McCandliss, A.B., *Park College*	Hoihow, Hainan, China
William Rennie McKinnon, B.M.E.	Ann Arbor
Clement Hooven Marshall, B.S.	Greenville, Ohio
Donald Manly Morrill	Big Rapids
Moses Emmett Morton	Lowndesboro, Ala.
Arthur Bernard Norton	Ann Arbor
†Paul Henry Piper, B.S., *g*	Alamo
Harry Jay Prall	Pontiac
Daniel Ignatius Clyde Reynolds, B.S.	Ann Arbor
Tom Howard Robertson	Ann Arbor
Juan Rodriguez, B.S.	Manati, P. R.
John Pirrie Shearer	Pontiac
Edwin Rogers Smith, A.B., *Indiana University*	Richmond, Ind.
James Harold Smith, B.S.	Coudersport, Pa.
Harry Brooks Spaulding, B.S., *Oklahoma Agricultural and Mechanical College*	Ralston, Okla.
James Marc Stanton	Richmond, Ind.
James Russell Stein	Detroit
Jane Darling Stevenson	Richmond, Ind.
Washington Parker Stowe, B.S., *Ohio Northern University*	North East, Pa.

Chow Foung Tang, A.B.	Hangchow, China
Lester Claire Todd, A.B., *Tabor College*	Detroit
Thomas Lawrence Tolan, B.S.	Ironwood
Eugene Frederick Traub, B.S.	Dubuque, Iowa
Vivian Arthur Van Volkenburgh	Detroit
Ruth Cecilia Wanstrom, A.B.	Rockford, Ill.
Robert William Watson	Ludington
Archibald Henderson Watt	Providence, R. I.
Leland Stanford Welbourn	Union City, Ind.
MacNaughton Wilkinson, B.S., *University of Rochester*	Clarkson, N. Y.
Gaillard Peter Willett, B.S.	Elmore, Ohio
Amelia Tabitha Wood, A.B., *University of Nebraska*, B.S., *Nebraska Wesleyan University*	Lincoln, Nebr.

SECOND YEAR STUDENTS

Catherine Parke Acklen, B.S., *Vanderbilt University*	Nashville, Tenn.
Arthur Darling Allen, *a*	Savannah, Ga.
Einer Bjarne Anderson, *a*	Ann Arbor
Walter Frederick Bach, *a*	Sebewaing
Carl Egbert Badgley, *a*	Dunkirk, N. Y.
Harold Draeggert Barnard, *a*	Constantine
Harry Francis Becker	Knoxville, Ill.
Lawrence George Beinhauer	Pittsburg, Pa.
William McFadden Bell	Ann Arbor
Norman Charles Bender, *a*	Buffalo, N. Y.
Richard Henry Bennett, *a*	Laurium
Herrmann Eugene Bozer, A.B.	Logansport, Ind.
John Patrick Caffey, A.B.	Salt Lake City, Utah
Joseph Cohen	Brooklyn, N. Y.
Isador Mayer Cohn, *a*	Spokane, Wash.
Theodore Hill Conklin, A.B.	Kingston, N. Y.
Edward John Coram, B.S., *University of Idaho*	Grangeville, Idaho
Cecil Corley	Herrick, Ill.
†John Russell Crossland, *a*	Saint Joseph, Mo.
David Samuel Dann, *a*	Detroit
Luis Manuel Debayle, A.B., *Inst. National de Occident de Leon*	Leon, Nicaragua
Casimir Anthony Domzalski, A.B., *University of Detroit*	Detroit
Donald Welsh Gudakunst, *a*	Saginaw
José Mautalvan Guerrero, B.S., *Inst. National de Occident de Leon*	Leon, Nicaragua
George Ricker Hageman, *a*	Spokane, Wash.
Edgar Schall Henry, A.B., *Grove City College*	Apollo, Pa.
Douglas Thomas Hoffman	Wilmette, Ill.
William Edward Howes, *a*	Ann Arbor
Herbert Leonard Huffington	Normal, Ill.
Leo George Jentgen	Detroit
Henry Adolph Johnson, *a*	Ishpeming
Wayne Alvin Johnston, *a*	Champaign, Ill.
Joseph Laurence Jones, *a*	Kansas City, Mo.
Floyd Burton Knapp	Holland
Thomas John LeBlanc, *a*	Cheboygan
Tan Piew Lee, A.B., *Taylor University*	Singapore, China
Elmore F. Lewis	Vandalia
William Henry Ludwig, Ph.C., *University of Washington*	Tacoma, Wash.
Leonard Mason Lyons	Kansas City, Mo.
Richard Moore McKean, A.B.	Detroit
John McDowell McKinney, Jr., *a*	Washington, D. C.
Margaret Augusta Miller, *a*	Stevensville, N. Y.
Maurice Clark Miller, *a*	Bay City
Martin Fitch Miner	Three Oaks
Henry Moes, *a*	Zeeland

Carlton Stewart Nash, A.B., *University of Rochester*	Ontario Center, N. Y.
Elsie Lois Backus Novy, *a*	Ann Arbor
Frank Orel Novy, *a*	Ann Arbor
Robert Lev Novy, A.B., M.S.	Ann Arbor
Henry Rust O'Brien, A.B., *Washburn College*, A.M., *Kansas University*	Lawrence, Kans.
Ira Dawson Odle, B.S., *Purdue University*	Oxford, Ind.
Earl Dorland Osborne	Petoskey
Antonios Joseph Panayotides, A.B., *Anatolia College*	Ann Arbor
Horace Wray Porter, E.E., *Lehigh University*	New York, N. Y.
Joseph Raymond Pugh, *a*	Ann Arbor
Charles Frederic Roche, *a*	Bay City
Donald Carmer Rockwell, *a*	Kalamazoo
Carl Elias Roser	Lansing
Raymond Dominic Schirack, A.B., *Ohio State University*	Saint Henry, Ohio
John Albert Sheldon	Plainwell
Reuben Wilson Shelley, *a*	Newfane, N. Y.
Clarence Emerson Sherwood, B.S., *Huron College*	Doland, S. Dak.
Sidney Jerome Shipman, *a*	Ann Arbor
Emory Walter Sink, A.B., M.S.	Ann Arbor
William Clare Skinner	Howell
Arthur Reve Smith, A.B.	Great Bend, Kans.
John Glen Smith	Ann Arbor
Theodore Louis Squier, *a*	Battle Creek
Leonard Francis Thalner, *a*	Ironwood
Roger Venning Walker	Detroit
Henry John Woessner, Jr.	Ann Arbor
Carroll Spaulding Wright, *a*	Conneaut, Ohio
Jerome Zeigler	Maysville, Ky.

FIRST YEAR STUDENTS

Theodore Wright Adams, *a*	Ann Arbor
George Chandler Adie	Barre, Vt.
Floyd Pierpont Allen	Ridgeway
Walter Owen Allen	Warsaw, Ind.
Manuel Demetrio Amador, B.S., *Pennsylvania State College*	Isabela, P. R.
George Robert Anderson	Cassopolis
Fred William Andreas, B.S., *Heidelberg University*	Cleveland, Ohio
Robert Elmer Anslow	Ionia
Donald Jerome Barnes	Pekin, Ill.
Samuel William Becker, *a*	Benton Harbor
Theodore Perry Bishop, A.B., *Hillsdale College*	Hillsdale
Ralph Edwin Boice, *a*	Toledo, Ohio
James Isadore Boland	Lansing
George Maxwell Brown, *a*	Deerfield
Florence A. Browne, A.B., *Vassar College*	Bay City
Melvin Joseph Budge, *a*	Coleman
Alfred Joseph Burr	Manistique
Nils Olof Byland, *a*	Battle Creek
Herbert Ezra Chamberlain, A.B., *Albion College, g*	Howell
Fitzgerald Hartan Clark	Jamestown, N. Y.
Robert Madden Cleary	Lockport, N. Y.
Ernest Edwin Cody, A.B., *Albion College*, A.M.	Ann Arbor
Russell Jay Coller	Vicksburg
Arthur Edward Cone, *a*	Toledo, Ohio
Douglas Squire Corpron	North Yakima, Wash.
Alfred William Coxon, Jr.	Pittsburg, Pa.
Ethan Bnage Cudney	Owosso
John Higgins Curtin	Chateaugay, N. Y.
Frank Edward Curtis	Big Rapids
Carleton Dean	Howell
Frank Leo Doran	Grand Rapids
George Christopher Doyle, *a*	West Duluth, Minn.

Thomas W. Durbin	McClure, Ohio
†Lawrence William Faust, *a*	Deadwood, N. Dak.
John Thomas Ferguson	Mount Morris
Russell Leslie Finch, *a*	Marquette
Linus Joseph Foster	Ann Arbor
John Louis Garvey	Iron Mountain
Lambert John Geerlings, A.B., *Hope College*	Reeman
Harvey Warren Goddard, A.B., M.S.F.	Ann Arbor
Fred William Dickson Goundry	Chateaugay, N. Y.
John Miller Graff	Black Lick, Pa.
Ruby Rutherford Green	Lansing
Ward Walter Harryman	Owosso
Lloyd Commodore Hart, *a*	Kokomo, Ind.
John Frank Haughey	Battle Creek
Ralph Ernest Hawley, A.B.	Ann Arbor
Lawrence William Hayes	Grand Rapids
†Mauritz Gustaf Hedin, *a*	Ironwood
Howard Hamden Heffron	Metamora, Ohio
Hubert Messner Heitsch	Pontiac
Clarence Scott Hickey	Toledo, Ohio
Henning Adolph Hill, A.B., *Augustana College*	Marquette
Carlon Russell Hills, A.B., *Albion College*	Berkeley, Cal.
Albert Salomon Hoheb	Santurce, P. R.
Frances Marie Howell, A.B., *Barnard College*	Paterson, N. J.
Henry Dirk Hunderman, A.B.	Grand Rapids
Paul Mills Ireland, *a*	Fort Sam Houston, Texas
Abel de Juan, *a*	San Juan, P. R.
John Tracy Kaye, *a*	Marquette
Joseph Angelus Kervin	Bradford, Pa.
Cecil Arden Kingman, *a*	Forest, Ohio
Augustus Kirchner, *a*	Detroit
James Sybert Klump, *a*	Saginaw
Alton Lester Kolpien	Dunkirk, N. Y.
Donald Francis Kudner, *a*	Lapeer
Hippocrates Marco Kyprianides, A.B., *Anatolia College*	Amassia, Turkey
Grant Harrison Laing	Iron Mountain
Edward O'Hearn Leahy	Liberty Center, Ohio
Sophronous Alinus McCutcheon	Bradford, Pa.
Earl William McKelvey	Pittsburg, Pa.
Gordon Thorburn MacPherson	Butte, Mont.
Kenneth Chancellor McPherson	Deadwood, S. Dak.
Jacob Manting	Grand Haven
Sarah Marcus, A.B., *Western Reserve University*	Cleveland, Ohio
Isadore Jack Mehlman, *a*	Toledo, Ohio
Elmer Forrest Merrill	Joliet, Ill.
Hazen Lawrence Miller, *a*	Highland Park
Norman Fritz Miller, *a*	Iron Mountain
William Jean Moerdyk, A.B., *Hope College*	Zeeland
George Floyd Moore	Normal, Ill.
Hugh Ransom Moore	Union City
Norman Benedict Muhme	Toledo, Ohio
Gentok Nakai, *a*	Osaka, Japan
Harry Monroe Nelson	Kane, Pa.
Alfred Nesler, *a*	Dubuque, Iowa
Paul Barkley Newcomb	West Unity, Ohio
Hope Hewitt Nichoson, *a*	Luther
William Stephen O'Donnell	Detroit
Joseph Palma, *a*	Lafayette, Ind.
Charles Ovide Paradis	Bessemer
Louis Lieber Rosenberg, *a*	Toledo, Ohio
Howard Frederick Rowley	Rochester, N. Y.
Leon Rubin	Terre Haute, Ind.
Samuel Jether Rubley	Ann Arbor
Nathan Salon	Fort Wayne, Ind.

Fred John Schuster	Cleveland, Ohio
Dean Charles Scroggie	Charlevoix
Charles Raymond Smith	Coraopolis, Pa.
Harold Walling Smith	Campbell, N. Y.
Glenadine Calkins Snow, B.S., *Kalamazoo College*	Ypsilanti
Louise Sophia Stahmer	Brooklyn, N. Y.
Marion Hope Stevenson, A.B., *Indiana University*	Akron, Ohio
William David Stinson, A.B.	Mount Vernon, Ind.
Emil Alfred Stoller, *a*	Bremen, Ind.
Rhudolph Webber Streat, B.S., *Michigan Agricultural College*	Flint
Henry Takacs, *a*	Waterford, Conn.
Me-iung Ting	Shanghai, China
Harriet Elizabeth Twombly, A.B., *Leland Stanford University*	Gustine, Cal.
Cornelius Elias VanderVelde	Dunkirk, N. Y.
Ruth Evangeline Wagner, B.S., *Michigan Agricultural College*	Oberlin, Ohio
Harold Graves Waller	Little Valley, N. Y.
Frank Andrew Weiszer, *a*	Detroit
Charles Neil Weller, *a*	Ithaca
Max Wershow	Columbus, Ohio
Fred Burnell Wight	Yale
Carl J. Yeisley	Port Clinton, Ohio

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HENRY M. BATES, Ph.B., LL.B., *Dean*
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RICHARD D. T. HOLLISTER, A.M.
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GROVER C. GRISMORE, A.B., J.D.
ROBERT G. DAY, A.B.

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VICTOR C. VAUGHAN, M.D., Ph.D., Sc.D., LL.D.
FRANK F. REED, A.B.
DALLAS BOUDEMAN, M.S.
EDWARD S. ROGERS, LL.B.
LAWRENCE MAXWELL, LL.D.
GEORGE L. CANFIELD, A.B.
CLARENCE A. LIGHTNER, A.B.

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Attendance

DEAN H. M. BATES, PROFESSORS E. C. GODDARD, and V. H. LANE.

STUDENTS*

THIRD YEAR STUDENTS

William Charles Achi, Jr., A.B.	Honolulu, Hawaii
Leslie Lewis Alexander	Detroit
Thomas Edgar Atkinson	Toledo, Ohio
Theron Wilson Atwood, Jr., A.B., *DePauw University*	Caro
William Earl Bachop	Sheakleyville, Pa.
Chester Kenneth Barnard	Cleveland, Ohio
Lawrence Daniel Bartlett	Cleveland, Ohio
Lloyd Edgar Battles	Baraboo, Wis.
Albert Rodney Baxter	Brodhead, Wis.
Lewis Rexford Bebout	Ann Arbor
Julius Lanson Beers, A.B.	Traverse City
Jay Thompson Bell, A.B., *Pennsylvania State College*	Ann Arbor
Julius Loeser Berns	Detroit
LeRoy H. Bibby	Reed City
Carl Binns	Addison
George Washington Bixler, Ph.B., *Muhlenberg College*	Easton, Pa.
Charles Harold Breymann	Toledo, Ohio
Cecil Aunger Brown	Chicago, Ill.
William Leo Cahalan, A.B., *University of Detroit*	Wyandotte
Burton Gordon Cameron	Central Lake
William Salisbury Cameron	Central Lake
Guy Jeremiah Carpenter, A.B.	Ann Arbor
William Randolph Carpenter	Marion, Kans.
James Bland Catlett, A.B.	Brookings, S. Dak.
Lester Lefever Cecil	West Milton, Ohio
George Cornelius Claassen, A.B., *Findlay College*	Grundy Center, Iowa
James Peter Clark	Oakland, Cal.
Irwin Isadore Cohn	Detroit
Harry J. Connine, A.B.	Grayling
Grant Lyle Cook	Brant
Leo Francis Covey, A.B.	Coldwater
Henry Lye Cowlin	North Crystal Lake, Ill.
Carleton Hall Crawford	Bellevue
Wendell Francis Crockett, A.B.	Wailuku, Hawaii
Lloyd Joseph Curby	Beaverville, Ill.
Louis Ferdinand Dahling	Bozeman, Mont.
Jacob Aric Dalm	Kalamazoo
Harry Charles Daniels	Elgin, Ill.
Jay Harold Den Herder, A.B.	Zeeland

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* A dagger (†) preceding a student's name signifies that he also pursued studies, for the whole or a part of the year, in another School or College of the University, indicated by an italic letter following the name, to-wit: *g*, Graduate School; *a*, College of Literature, Science, and the Arts; *e*, College of Engineering; *ea*, College of Architecture; *m*, Medical School; *p*, College of Pharmacy; *h*, Homoeopathic Medical School; *d*, College of Dental Surgery. The letter following the name (without the dagger) indicates that the student is pursuing a combined curriculum, leading to a degree in each of the two.

Harry Nathan Deyo	Rockford
Leonard Patrick Diederichs	Iron River
John Arthur Dougherty	Kankakee, Ill.
Kenneth Owen Doyle	Menominee
Maurice Francis Dunne	Springfield, Ill.
Ferris Humphrey Fitch, A.B.	Stockbridge
Fred Sylvester Flick, A.B.	Hazleton, Pa.
Samuel Daniel Frankel, B.S. (C.E.), *Georgia School of Technology*	Atlanta, Ga.
Sherley Galen	Alliance, Ohio
Ralph Fesler Gates, A.B.	Columbia City, Ind.
Harry G. Gault, A.B.	Flint
Robert Elwyn Gleason	Sandusky
Robert Milton Goodrich	Port Huron
Benjamin Berul Gordon	New London, Conn.
Elmer Hiram Groefsema, A.B.	Mountain Home, Idaho
Frank Marion Gunter	Indianapolis, Ind.
John Giffert Gutekunst	State Center, Iowa
Philip Alan Hadsell	Cassopolis
Reuel Roy Hall	Anoka, Minn.
Marion Scribner Harlan	Hudson
Merwin Haven	Ottumwa, Iowa
Abner Lowrie Heisler	Ravenna, Ohio
Jules Joseph Herbert, A.B.	Detroit
Harry Reynolds Hewitt, A.B.	Hartford
Jay Frank Heydon	Traverse City
Oliver Charles Heywood, A.B.	Berwyn, Ill.
Louis Jesse Holther	Ogden, Utah
Eugene Bernard Houseman, A.B.	Grand Rapids
Glenn Allen Howland	Detroit
Lathrop Williams Hull	Oshkosh, Wis.
Louis Cecil Hurwich	Waterloo, Iowa
Harry Emmanuel Johnson, A.B.	East Lake
Walter Lee Johnson, A.B., *Trinity College (N. C.)*	Apex, N. C.
James Fayette Jones	Geneva, Minn.
Nathan Maurice Kaufman	Youngstown, Ohio
Alfred Pruden Kelley	Elgin, Ill.
Nathan Beal Kelly	Coopersville
Bernard William Kemper	Spearfish, S. Dak.
Frank Earl Kenney	Miles City, Mont.
Haddon Spurgeon Kirk, A.B., *Illinois University*	Mansfield, Ill.
Francis Julian Kleeman	Terre Haute, Ind.
Alexander John Knox, A.B., *Huron College*	Monango, N. Dak.
Walter William Kohler, A.B., *Wesleyan University*	Rendham, Pa.
Paul Alexander Krueger	Michigan City, Ind.
Herbert Will Lamb, E.M., *Lehigh University*	Adrian
Henry Knowlton Lane, A.B.	Ann Arbor
Myer Barnett Lavine	Cleveland, Ohio
Arthur Hurd Lee	Manchester, Ala.
Charles Hermon Lemmon, Jr.	Toledo, Ohio
Morris Levinkind	Chicago, Ill.
Leslie William Lisle, A.B.	Ann Arbor
Clarence Albert Lokker, A.B., *Hope College*	Holland
Arthur Stanley Loveland, B.S., *Pomona College*	Bonsall, Cal.
Harrison Logan McCarthy, A.B., *Mount Union College*	Leetonia, Ohio
Don Bradford McCloud	Knoxville, Tenn.
Thurman Lovejoy McCormick	Joplin, Mo.
David Archibald Macdonald	Muskegon
Thomas Francis McDonald	Independence, Iowa
Ralph Albion McGinnis	Leon, Iowa
Forest E. McKee	Dublin, Ind.
Morris Chapman Madison	Ann Arbor
Melville Carlos Mason, Ph.B., *Brown University*	Rupert, Vt.
Albert Alexandre Mattson	Lead, S. Dak.

Herman Rudolph Miller	Chicago, Ill.
Peter Anthony Miller	Detroit
Lester Stock Moll	Detroit
Robert Burns Murchie	Traverse City
Shelby Green Ogden	Paris, Ill.
Irwin Stanley Olson	Chicago, Ill.
William Laurie Owen, A.B.	Covington, Tenn.
Henry William Petersen, A.B.	East Chicago, Ind.
Peter Oliver Phillips	Glendive, Mont.
Barnard Pierce, A.B.	Lansing
Harry Nicholas Pritzker, B.S., *Northwestern University*	Chicago, Ill.
Bland Allen Pugh	Albion
Reno Paul Ransom	Detroit
Harry Dale Reber	Fremont
Albert Frazier Ross	Kansas City, Kans.
Herbert Blaine Rudolph, A.B., *University of South Dakota*	Canton, S. Dak.
John Einar Sanders	Bisbee, Ariz.
Wayland Hall Sanford, AB., *Amherst College*	Duluth, Minn.
Donald McMorris Sarbaugh	Goshen, Ind.
Oscar Carl Sattinger	Indianapolis, Ind.
Harry Simeon Scheinman	Detroit
Myron Alton Schlissel	Detroit
Fred Nelson Searl	Mason
Charles Gault Seidel	Elgin, Ill.
Donald Wesley Sessions	Lansing
Douglas Forrest Smith	Council Bluffs, Iowa
†James Geddes Staley, A.B., *g*	Battle Creek
W. R. Barksdale Stevens, A.B., *University of Mississippi*	Hattiesburg, Miss.
Albert Earl Stoll	Kansas City, Mo.
John Perry Sturges	Cleveland, Ohio
Walter Joseph Thalheimer, A.B., *Leland Stanford University*	Phoenix, Ariz.
Jacob Andrew Tolonen	Ann Arbor
Harry Milton Tompkins	Herington, Kans.
Hampton Grover Wall	Pasadena, Cal.
John Rhoades Watkins, A.B.	Saint Johns
Charles Pierre Wattles, A.B.	Detroit
Walter William Wensinger	Fremont, Ohio
John Edwin Wheeler	Marion, Kans.
Roman Casimir Widmann	Johnstown, Pa.
Edgar Morgan Williams	Akron, Ohio
Frank Eugene Williams	Saint Louis, Mo.
Homer Hanson Williams	Hamilton, Ill.
Charles McVeigh Willits	Philadelphia, Pa.
Frank H. Wisner	Ann Arbor
Chester Burton Wray, Ph.B., *Franklin and Marshall College*	Altoona, Pa.
Sol Williston Wyman	Cleveland, Ohio

SECOND YEAR STUDENTS

John Quincy Adams, A.B.	Columbia City, Ind.
Robert Moffat Allan	Detroit
William Coit Allee, A.B., *Princeton University*	Detroit
James Madison Barrett, Jr., A.B.	Fort Wayne, Ind.
Arthur Paul Bogue	Ann Arbor
†Lucius Comstock Boltwood, A.B., *Yale University. g*	Grand Rapids
Merchant Bliss Bowman	Martin, Ohio
William Franklin Brown, A.B., *Mercer University*	White City, Fla.
Edward Clarence Butler	Arion, Iowa
Raymond Alfred Butler	Highland Park
Rolla Louis Carpenter, A.B., *Princeton University*	Detroit
James Henry Cartwright, Jr., A.B., *Leland Stanford University*	Oregon, Ill.

Howard Burnside Coblentz, A.B., *Washington and Jefferson College*	Erie, Pa.
Samuel Louis Cohen, A.B.	Virginia, Minn.
John Paul Colden	Clairon
Joseph Baker Comstock, A.B., *Dartmouth College*	Alpena
John Vincent Cotton, A.B., *Centre College*	Akron, Ohio
Glenn Monroe Coulter, A.B.	Chittenango, N. Y.
Kenneth Keith Cox	Rose, Kans.
Daniel Henry Cronin, A.B.	Ann Arbor
Robert Goss Day, A.B., *Mount Union College*	Alliance, Ohio
Joseph Michael Donnelly, A.B., *College of St. Thomas*	Ontonagon
Robert Hiram Dunn, A.B., *University of Wisconsin*, A.M., *ibid*	Madison, Wis.
Roland Glen Dunn	Madison, Wis.
Henry Ide Eager	Mount Vernon, Wash.
Harold Mulkey Easley	Detroit
Douglas Stilwill Elliott	Sioux Falls, S. Dak.
Louis Bart Emerman	Erie, Pa.
John Martin Erwin, A.B.	Groton, S. Dak.
Donald Arthur Finkbeiner	Perrysburg, Ohio
John Francis Foran, A.B.	Chateaugay, N. Y.
Lady Willie Forbus, B.S., *University of Mississippi*	Laurel, Miss.
Leland Stanford Forrest, A.B., *University of Arkansas*	Siloam Springs, Ark.
Raymond Archibald Fox	Wichita, Kans.
Melvin Ralph Gombrig, *a*	Chicago, Ill.
Edward James Gorman	Princeton, Ill.
Douglas Allan Graham, A.B.	Detroit
Leon Greenebaum, A.B.	Newton, Kans.
Henry George Gress, A.B., *Juniata College*	Meyersdale, Pa.
Edward Murray Grinnell, A.B., *Yale University*	Ann Arbor
Robert Louis Grinnell, A.B., *Yale University*	Bay City
Reese Aurelius Hall	Lawrence, Kans.
Lester Blaine Harper, A.B., *Wabash College*	Crawfordsville, Ind.
Walter William Harris, A.M., *Bucknell University*	Lewisburg, Pa.
Henry Curtis Hart, A.B., *Kalamazoo College*	Kalamazoo
Lester Sander Hecht, Ph.B., *Dickinson College*	Lock Haven, Pa.
Oris Wesley Helsel	Pratt, Kans.
William Harrison Hodges	Kingsley
James Frank Houghton, A.B., *James Millikin University*	Petersburg, Ill.
David Isadore Hubar, A.B.	Detroit
Henry Kirkwood Huber	Tipton, Iowa
George Francis Hurley, A.B.	Chicago, Ill.
Edward McKeehan Johnston, A.B.	Valparaiso, Ind.
William Stephen Kammerer	Louisville, Ky.
Clarence Klinger, A.B., *Ohio Wesleyan University*	Lima, Ohio
Frank Sidney Kremer, B.S., *South Dakota State College*	Brookings, S. Dak
Athol Eugene Later	Rigby, Idaho
Hector Arthur McCrimmon	Caseville
Lester A. Meeks, A.B., *Indiana University*	Galveston, Ind.
Joe Meyer	Detroit
Alexander Salisbury Montague, B.S., *Cornell University*	Howell
Howard Emrys Morse, A.B.	Dillon, Mont.
Marcus Randall Morton	Plummer, Idaho
Benjamin Snively Motter	Lima, Ohio
Francis James Murphy	Flint
Charles Joseph Newland, A.B., *Washington State College*	Ritzville, Wash.
John David Nichols	Vinton, Iowa
Amos Frank Paley	Dubuque, Iowa
Alejandro José Panlilio	Pampanga, P. I.
John James Poleski	Detroit
Philip Clive Potts, A.B.	Ann Arbor
Louis Joseph Reisch	Springfield, Ill.

Alex James Rogoski	Little Rock, Ark.
Alonzo Clemens Ruihley	Archbold, Ohio
James Elwood Ryan	Mount Pleasant
Dwite Hayden Schaffner, A.M., *Bucknell University*	Falls Creek, Pa.
Jesse Morrison Seabright, A.B., *Wabash College*	Bellaire, Ohio
William Chauncey Searl	Ithaca
Daniel Norman Simons	Houghton
Frederick Vernon Slocum, A.B.	Ann Arbor
Edward Otis Snethen, A.B., *Marion College*	Walkerton, Ind.
Charles Leonard Strauss, A.B., *Allegheny College*	Saegertown, Pa.
Clarence James Tannehill, A.B., *Antioch College*	West Alexander, Pa.
James William Thomas, A.B.	Detroit
Guillermo Zosimo Villanueva, A.B., *Silliman Institute*	Bais, P. I.
Lester Benson Vincent, A.B., *State College of Washington*	Chesaw, Wash.
William Wallace Visscher, A.B., *Hope College*	Holland
George Raymond Whitmer	Sioux City, Iowa
Earl Loeb Wiener, A.B.	Shreveport, La.
Ross Frederick Wilkins	Ann Arbor
George Ward Williams	Primghar, Iowa

FIRST YEAR STUDENTS

Oscar Abraham Adel	Detroit
Rutgers Alexander	Grand Ledge
Emil Anneke, *a*	Bay City
Barker Douros Bairam, A.B., *Ohio University*	Paphos, Cyprus
Simon Peyton Baker, *a*	Plainville, Ill.
Arthur Bohn	Lockport, Ill.
Robert John Bradfield	Bay City
Hugo Edward Braun, A.B.	Saginaw
Leavitt James Bulkley, *a*	Detroit
William Edward Burby, *a*	Ann Arbor
Louis Edward Burke	Ypsilanti
Ronald Augustus Butler, A.B.	Ann Arbor
Alvin Stephen Buzbee, *a*	Little Rock, Ark.
Leo John Carrigan	Lapeer
James Blaine Cashin, B.S., *Fisk University*	Decatur, Ala.
James Emile Chenot, A.B.	Detroit
Charles Suskin Cohn	Portland, Ore.
Herman Tucker Cohn, *a*	Springfield, Ill.
†Floyd Whitney Cone, *a*	Detroit
Rolland Earl Corbin	Ann Arbor
Herman Allan DeLano	Kalamazoo
Earl George Dorfner	Ord, Nebr.
Waldo John Duddleson	East Ely, Nev.
Duke Wellington Dunbar	Quincy, Ill.
Gaius Herbert Dunlap	Holly
Theodore Henry Elferdink, A.B., *Hope College*	Holland
Frank Gustavus Everts	Fresno, Cal.
Leslie George Field	Manistee
Holland Fletcher Fla Havhan	Pittsburg, Pa.
Isadore D. Friedman	Tawas City
Donald Frederick Geddes, A.B., *Williams College*	Toledo, Ohio
Charles Lazarus Goldstein, *a*	Detroit
Abraham Jacob Gornetzky, *a*	Detroit
Charles Lucien Gray	Canton, Kans.
Charles Louis Haas, *a*	Braddock, Pa.
Lloyd Bradford Hart, A.B., *Adrian College*	Adrian
†Hyatt Clair Hatch, *a*	Atlanta, N. Y.
Horace Starbuck Haworth, A.B., *Whittier College*	High Point, N. C.
Emanuel Herman Heimann	Chicago, Ill.
Victor Harold Herbert, *a*	Detroit
Samuel Henley Hill, *a*	Arkansas City, Kans.
Charles Harrison Hobart	Topeka, Kans.
†Glenn Leroy Hollenbeck, *a*	Capac

Ward Morris Hopkins, *a*	Centerville, N. Y.
Edward Murray Hudson	Monroe, La.
Eric Edward Humpsch	Northport
Warren James Huss	Three Rivers
Charles Edgar Hutton, *a*	Sioux City, Iowa
Hepburn Ingham	Des Moines, Iowa
Neal Dow Ireland	Florence, Kans.
Sydney Arthur Jacobs	Detroit
Harold Bray Johnson	Tekonsha
Rudolph Martin Johnson	Ishpeming
Walter Oscar Red Johnson	Youngstown, Ohio
Lawrence Beers-Jones	Elgin, Ill.
Lee Everett Joslyn, Jr., *a*	Detroit
Charles Lott Kaufman, *a*	Bellefontaine, Ohio
Russell Kehoe, A.B., *Hanover College*	Jeffersonville, Ind.
Eugene Dexter Kirkby, *a*	Jackson
Edward Knuff, *a*	Johnstown, Pa.
†Frank Frederick Kolbe, A.B., *g*	Ann Arbor
John Piminx Lake, A.B., *University of Arkansas*	DeQueen, Ark.
Oscar Parmenas Lambert	Pennsboro, W. Va.
John William Langs, *a*	Port Huron
Laurence (Dominic) Denny Larke, *a*	Rogers
Milton August Leedrach	Vermilion, Ohio
R. Harry Leslie, *a*	Ann Arbor
Abraham Jacob Levin, A.B.	Detroit
Archie R. Levine	Houghton
Raymond McKinley Lewis	Adrian
Don M. Lillie, *a*	Coopersville
Harold F. Lusk	Elsie
Malcolm Innes MacGregor	Ypsilanti
Don Townsend McKone	Jackson
William Charles Gordon McLeod	Woodstock, Ont.
Edward Maximillion Martinek	Menominee
Edouard William Massie	Bessemer
Ben Buford Mathews, A.B., *University of Arkansas*	Hot Springs, Ark.
Joseph Matsen, B.S., *State College of Washington*	Bickleton, Wash.
Peter Mihelchich	Calumet
George William Miller	Utahville, Pa.
†De Thurston Mosier, *a*	Muskogee, Okla.
†Cyril Harold Motulsky, *a*	Dubuque, Iowa
†George Ignatius Murphy, *a*	Harbor Beach
Willis Dean Nance, *a*	Chicago, Ill.
Frank Ford Nesbit, *a*	Washington, D. C.
J. Richard Newman	Albion
Fred Reginald Northway	Durand
Harold Anthony O'Connell	Buffalo, N. Y.
William Bernard O'Connell	Mount Pleasant
James Don O'Connor	Johnstown, Pa.
†George Lewis Ohrstrom, *a*	Tacoma, Wash.
John Seymour Fowler Orr	Tecumseh
Edgar Russell Paige, *a*	Deckerville
Frank Harlan Palmer, A.B., *Ohio University*	Thornville, Ohio
William Crane Palmer	El Dorado, Kans.
Clarence Knox Patterson, *a*	Pontiac
George Arthur Pelgrim, A.B., *Hope College*	Holland
Robert Taylor Perry	Flint
Ferdinand Paul Petermann, *a*	Laurium
Thomas Earl Phillips, A.B., *William and Vashti College*	Viola, Ill.
Samuel Goodwin Pickus	Sioux City, Iowa
Lisle Leo Pollock, *a*	Decatur
†Isadore Harris Polozker, A.B., *a*	Detroit
Frank Edward Quinlan	Ann Arbor
Alfredo Ramos, A.B., *William Jewell College*	Calumpit Bulacan, P. I.
Franklin Peleg Randall, *a*	Fort Wayne, Ind.

Clarence Augustus Reid	Circleville, Ohio
Edward John Richards, A.B., *Bucknell University*. A.M., *ibid*	Homestead, Pa.
Dean Marvin Richmond	Ann Arbor
John Carl Roberts	East Saint Louis, Ill.
David Theodore Rosenthal, A.B.	East Chicago, Ind.
Henrietta Elizabeth Rosenthal, A.B., A.M.	Ann Arbor
Turner McKinley Rudesill, *a*	Rapid City, S. Dak.
James Wirth Sargent, *a*	Wichita, Kans.
Leland Nye Scofield	Sterling, Colo.
David Elder Shartel	Neosho, Mo.
John Simpson	Jackson
Samuel Jacob Slavens, *a*	Oak Hill, Ohio
Carlton Fessenden Small, *a*	New London, Conn.
Delos Grosvenor Smith, *a*	Ionia
Henry W. Smith	Tyro, Ark.
Read Smith, *a*	Ann Arbor
Winter Nicholas Snow, A.B., *Hillsdale College*	Mars Hill, Me.
†Robert Henry Somerville, *a*	Ann Arbor
Oscar Allen Stafford	Chariton, Iowa
George William Struckmann	Berwyn, Ill.
Carl Henry Stuhrberg, A.B., *Adrian College*	Ann Arbor
Laureston Oliver Telfer	Sarnia, Ont.
William Henry Temple, A.B., *Howard University*	Detroit
Walter Roscoe Osborne Tonkin, *a*	Edwardsburg
Clifford Martin Toohy, *a*	Leslie
Irving Samuel Toplon	Chicago, Ill.
Lowell Hafner Tuttle	Oak Park, Ill.
Sylvester Raymond Urbanski, A.B., *St. John's University*	Toledo, Ohio
George Freeman Wales	Tacoma, Wash.
Fred Ralph Walter, *a*	Detroit
Frank Leonard Walters, A.B.	Lansing
Ralph Lane Warren	Roswell, N. Mex.
Lester Elba Waterbury, *a*	Chicago, Ill.
†Owen Jefferson Watts, *a*	Wagoner, Okla.
Carl May Weideman	Detroit
†Henry Herman Weideman, *a*	Detroit
Robert Harold Wilson	Los Angeles, Cal.
†Conson Cummins Wilson, *a, g*	Jackson, Tenn.
Rollin Robbins Winslow	Saint Joseph
George Byron Wolfe	Bradford, Pa.
Ernest Luttrell Zeigler	Maysville, Ky.

SPECIAL STUDENTS

Elmore John Blackert	Jackson, Tenn.
Donald Rouzer Brown	Norfolk, Va.
Ralph Harding Jones	Malad City, Idaho
John Francis Jordan, A.B.	Pittsburg, Pa.
Walter Charles Kelsey	Elyria, Ohio
Robert Porter Lane, A.B., A.M.	Ann Arbor
Alfred Joseph DeLorimier, A.B., *Gonzaga University*	Havre, Mont.
William Cottrell Pender, LL.B., *University of South Carolina*	Norfolk, Va.
John Edward Tighe	Plymouth
Robert Carter Tucker, LL.B., *Kansas City School of Law*	Kansas City, Mo.
Lynn M. Whipple	Benton Harbor
Roy Ulysses Woods, A.B., *University of Oklahoma*	Verden, Okla.

The students named below, enrolled in the College of Literature, Science, and the Arts, also pursued studies in the Law School, although not registered in the combined curriculum:

David Charles Holub	Akron, Ohio
Raymond F. Kahle	Buffalo, N. Y.
De Thurston Mosier	Muskogee, Okla.
Cyril Harold Motulsky	Dubuque, Iowa

College of Pharmacy

FACULTY

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EDWARD D. CAMPBELL, B.S.
MOSES GOMBERG, Sc.D.
S. LAWRENCE BIGELOW, Ph.D.
JULIUS O. SCHLOTTERBECK, Ph.C., Ph.D., *Dean*
ALVISO B. STEVENS, Ph.C., Ph.D., *Secretary*
LEE H. CONE, Ph.D.
DAVID M. LICHTY, Ph.D.
WILLIAM J. HALE, Ph.D.
HOBART H. WILLARD, Ph.D.
ROBERT J. CARNEY, A.B.
HARRY N. COLE, A.B., M.S.
JAMES E. HARRIS, Ph.D.
ROY K. McALPINE, A.B.
CLIFFORD C. GLOVER, Ph.C., M.S.
CLIFFORD C. MELOCHE, Ph.D.
ALFRED L. FERGUSON, B.Pd., Ph.D.
CHESTER C. SCHOEPFLE, B.Ch.E.
EARL C. SHERRARD, M.S.

Assistants

EDWARD M. HONAN, A.B.
EDWARD A. RYKENBOER, M.S.
FRANK C. VIBRANS, A.B.
GALO W. BLANCO, M.S.
EDGAR C. BRITTON, A.B.
NORBERT A. LANGE, A.B.
HAROLD R. WELLS, B.S.
FRED C. HAHN, B.S.
JAMES D. TODD, B.Ch.E.
ALEXANDER D. WEBB, B.S.
WESLEY MINNIS, M.S.
SHERWOOD M. PINKERTON, Jr., B.Ch.
JOSEPH S. RICHTIG, B.S.

STUDENTS*

Haji Hassan Ahmad, Ph.G., *Valparaiso University*	S	Lahore, India
Arthur Edwin Anderson	Ph.C.	Jamestown, N. Y.
Anne Louise Ashton	B.S.	Ypsilanti
Lawrence Atkinson, Ph.C., *Purdue University*	B.S.	Holly

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* The abbreviations following the name indicate the degree for which the student is studying. Where instead the letter S is given, the student is pursuing miscellaneous studies without being registered as a candidate for a degree. A dagger (†) preceding a student's name signifies that he has pursued studies, for the whole or a part of the year, in another School or College of the University, indicated by an italic letter following the name, to-wit: *a*, College of Literature, Science, and the Arts; *e*, College of Engineering; *ea*, College of Architecture; *m*, Medical School; *l*, Law School; *h*, Homoeopathic Medical School; *d*, College of Dental Surgery.

Otis Neukom Auer, Ph.B., *St. Louis College of Pharmacy*	B.S.	Staunton, Ill.
Rhea Elizabeth Barbarin	B.S.	Freeland
Clare Harry Beverly	S	Ann Arbor
Alfred Freeman Black	B.S.	Traverse City
Bernard Bosman	B.S.	Holland
Ellis J. Braman	Ph.C.	Leslie
Baxter Latham Broadwell	B.S.	Springfield, Ill.
Robert George Brown, B.S.	Ph.G.	Pigeon
Harold Jennings Burchfield	Ph.G.	Mesick
Clarence Louis Butler	B.S.	Marlette
George Raymond Byrnes	B.S.	Laingsburg
Rufus Louis Carr	Ph.G.	Cleveland, Ohio
James Archibald Congo	Ph.C.	Port Huron
Ernest Ransom Crandall, Ph.C.	B.S.	Petoskey
Herbert Charles Crandall	Ph.G.	Manistee
Andrew Jackson Cromer	B.S.	Sturgis
Don Virgil Cross	Ph.C.	Minerva, Ohio
Edwin Walter Crysler	Ph.C.	Littleton, Colo.
Mary Elizabeth Dunlap	B.S.	Elba, N. Y.
Verne Guy Eaegle	Ph.G.	Saint Johns
Ralph Bryan Fast	B.S.	Celina, Ohio
George Karl Finzel, Ph.G.	B.S.	Monroe
Jennings Alexander Fleischbein	Ph.G.	Ironwood
Normal Carl Fliegel	B.S.	Sebewaing
Earl Jackson Foster	Ph.C.	Rushville, N. Y.
Chester George Fuss	B.S.	Little Valley, N. Y.
Harold Watson Gaudy	Ph.G.	Ypsilanti
Paul Eugene Gibson	Ph.C.	Three Oaks
Leo Lawrence Goss	Ph.G.	Coldwater
Seth Parker Grandy, Ph.C., *Philadelphia College of Pharmacy*	B.S.	North East, Pa.
Elmer William Grunow	B.S.	Detroit
John James Hardenburg	B.S.	Brocton, N. Y.
Joseph Lester Hayman	B.S.	Murray City, Ohio
Guy Frank Heim	Ph.G.	Berrien Springs
Abraham Meyer Helbach	S	Berdiansk, Russia
Lawrence Clayton Heustis	Ph.C.	Colorado Springs, Colo.
Dougal James Hillier	Ph.C.	Wolverine
Edgar William Holmgren	Ph.G.	Ishpeming
Eugene LaVerne Jackson	Ph.C.	Oberlin, Ohio
Harold Erskine Kenaga	B.S.	Royal Oak
William Eugene Kirchgessner	B.S.	Grand Rapids
Everett William Kratz	Ph.C.	Leipsic, Ohio
William James McGill	B.S.	Detroit
Herschel Brian McWilliams	B.S.	Plainville, Ind.
Frederick Ernest Marsh, Ph.G., *Creighton College of Pharmacy,*	B.S.	Omaha, Nebr.
Clayton Bradley Matteson	B.S.	Mason
John Fredrick Maulbetsch	B.S.	Ann Arbor
Edward David Mayo	Ph.G.	South Haven
John Gibson Mead	Ph.C.	Nashville
Nicholas deSales Miller	B.S.	Ronkonkoma, N. Y.
Harold Fildew Millman	B.S.	Saint Johns
Joseph Isadore Millner	B.S.	Detroit
John Earle Naylor	Ph.G.	Ann Arbor
Irma Marie Neumann	Ph.C.	Ann Arbor
Henry Nicholas Oellrich	B.S.	Narrowsburg, N. Y.
Edgar Theophilus Olson	B.S.	Ann Arbor
Clarence Blaine Omarah		Eureka, Ill.
Thomas Joseph O'Marra	Ph.G.	Romulus, N. Y.
Harold Allen Osborne, A.B., *University of Nebraska*	B.S.	Genoa, Nebr.
Leonard Vincent Pearson	B.S.	Ann Arbor
Ethel Marion Person, Ph.C.	B.S.	Ann Arbor

Donald Andrew Phillips	Ph.C.	Fenton
Margaret Jessie Pietz	S	Saginaw
†Lawrence Henry Planz, e	B.S.	Marlette
Alvah Joseph Pope	Ph.C.	Detroit
Justin Lawrence Powers	B.S.	Homer
George Raymond Reesy	Ph.G.	Worland, Wyo.
William Edward Regan	S	Ann Arbor
Fred Lee Rehor	B.S.	Hastings
William Samuel Reveno	B.S.	Detroit
Carl Louis Rominger	Ph.C.	Ann Arbor
Raymond Sylvester Ross	Ph.C.	Ann Arbor
Maurice Lane Rushmore	B.S.	Old Mission
†Lawrence Magnus Rutz, *a*	B.S.	Detroit
Harvey Eugene Sayles	B.S.	Yale
Merman Granville Saylor	B.S.	Chicago, Ill.
William Frederick Carl Schanz	S	Ann Arbor
Harry John Schultz	Ph.C.	Bay City
Manley Irving Shaw	B.S.	Pontiac
Donald Henry Shields	Ph.C.	Lewiston, Ill.
Andrew David Smedberg, Jr.	B.S.	Ishpeming
Granger Morris Smiley	B.S.	Olean, N. Y.
†Anna Amelia Smith, *a*	Ph.C.	Greenwood, N. Y.
John Henry Smith	Ph.C.	Moose Jaw, Saskatchewan
Leroy Grant Snow	B.S.	Cheyenne, Wyo.
Jacob Kent Spink	Ph.C.	Mason
Ray Earl Spokes	B.S.	Ann Arbor
Harold Charles Storich	B.S.	Berrien Springs
Schuyler William Stratton	Ph.G.	Castle, N. Y.
Pauline Maud Tessmer	Ph.C.	Ann Arbor
Russell Anthony Thomas	B.S.	Lawton
Harold Jay Thorburn	Ph.C.	Mason
Carl Haskell Thorington	Ph.C.	Northampton, Mass.
Mervin Wilfred Tomlin	B.S.	Port Huron
Howell Louis Van Gorden	Ph.G.	Albion
Abram Van Loo	Ph.C.	Zeeland
Max Hodges Vann	B.S.	Portsmouth, Va.
Henry Carr Varnum	Ph.G.	Jonesville
Irene Dorothy Ruth Vokes	Ph.C.	Detroit
Graham R. Walker	Ph.C.	Cheyenne, Wyo.
John Philip Walsh	S	Saint Ignace
†Elba Emanuel Watson, B.L., *g*	B.S.	Grand Rapids
Edward Cecil Watts	Ph.G.	Peru, Ill.
Elmer Hauser Wirth	B.S.	Sandusky, Ohio
Walter Harold Wistrand	B.S.	Menominee
Florence Helen Wixson, A.B.	B.S.	Caro
Merle Melvin Woodward	B.S.	Springville, N. Y.
James Alexander Wyman	B.S,	Gloversville, N. Y.

Homœopathic Medical School

FACULTY

HARRY B. HUTCHINS, LL.D., *President*
VICTOR C. VAUGHAN, M.D., Ph.D., Sc.D., LL.D.
WARREN P. LOMBARD, M.D., Sc.D.
WILBERT B. HINSDALE, M.S., A.M., M.D., *Dean*
WILLIS A. DEWEY, M.D., *Secretary*
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FREDERICK G. NOVY, M.D., Sc.D.
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ALDRED S. WARTHIN, M.D., Ph.D.
DEAN W. MYERS, M.D.
HUGH M. BEEBE, M.D.
ROLLO E. McCOTTER, M.D.
GEORGE I. NAYLOR, B.S., M.D., *Recorder*
JOHN F. BLINN, M.S., M.D.

Assistants

CAMP C. THOMAS, B.S.
ROBERT H. CRISWELL, M.D.
DAVID B. HAGERMAN, M.D.
HUGH R. HILDEBRANT, A.B., M.D.
HOWARD M. HOLCOMB, M.D.
FLOYD R. TOWN, M.D.
WILLY C. R. VOIGT, Min.E.

STUDENTS*

RESIDENT PRACTITIONERS

John Ferguson Blinn, B.S., *New Mexico College of Agriculture and Mechanical Arts,* M.S., *ibid,* M. D.	Ann Arbor
Robert Harold Criswell, M.D.	Quincy, Ill.
David Benjamin Hagerman, M.D.	Grand Rapids
Philip Eggleston Haynes, A.B., *Bethel College,* M.D.	Howell, Ky.
Hugh Rannells Hildebrant, A.B., M.D.	Ann Arbor
Howard Morton Holcombe, M.D.	Chateaugay, N. Y.
Robert Scott Ideson, M.D.	Avon, N. Y.
Floyd Raymond Town, M.D.	Ann Arbor

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* A dagger (†) preceding a student's name signifies that he has pursued studies, for the year or a part of the year, in another School or College of the University, indicated by an italic letter following the name, to-wit: *a,* College of Literature, Science, and the Arts; *e,* College of Engineering; *ea,* College of Architecture; *m,* Medical School; *l,* Law School; *p,* College of Pharmacy; *d,* College of Dental Surgery. The letter (without the dagger) indicates that the student is pursuing a combined curriculum leading to a degree in each of the two.

FOURTH YEAR STUDENTS

Victor William Bergstrom	Bay City
Fred J. Cady	Mason
Lloyd Ralph Clay	Angola, Ind.
Harold Francis Closz, B.S., *Central College*	Webster City, Iowa
Frank Alvin Howland, M.D., *Bennett Medical College*	Adrian
Jens Andreas William Johnson	Castana, Iowa
Charles Maggio	Rochester, N. Y.
Clifford Bagley Mandeville	Bartlesville, Okla.
Edward McNee Mead	Ann Arbor
Ralph Stanley Stouffer, B.S., M.D., *Jefferson Medical College*	Hagerstown, Md.
Camp Chandler Thomas, B.S., *Kalamazoo College*	Ann Arbor
†Willy Karl Rudolf Voigt, E. Min., *University of Freiburg*, B.S., *ibid*, *g*	Charlottenbrunn, Germany
Bernard Henry Vollertsen	Rochester, N. Y.
Charles Clements Wolcott, B.S., *Kansas State Agricultural College*	Santa Monica, Cal.

THIRD YEAR STUDENTS

Garth Wilkinson Boericke	San Francisco, Cal.
Linn John Boyd	Lansing
John David Coons, A.B., *Wabash College*	Lebanon, Ind.
Clayton Sprague Emery	Kenton, Ohio
Lewis William Grice	Saint Clair
Harry Washington Grover	Ann Arbor
Ammi Lloyd Johnson	San Bernardino, Cal.
Byron Walter Malfroid	Houghton
Charles Burdette Pillsbury	Minneapolis, Minn.
Oliver Riggle	Freewater, Ore.
John Henry Staacke	Duluth, Minn.
Edward Clinton Stebbins, B.S., *Hobart College*	Brooklyn, N. Y.
Hugh John Strathearn, A.B., *Adrian College*	Jackson

SECOND YEAR STUDENTS

Guy Rexford Bullen	Parma
James Krotzer Durling, A.B., B.S., *Hiram College*	Wadsworth, Ohio
Charles Iden Kidd	Battle Creek
Richard Benjamin Penzotti, A.B., *Albion College*	Orion
Carl Eugene Shaw	Dayton, Ohio
Linwood Willard Snow	Parma
Franklin Arthur Stiles, *a*	Binghamton, N. Y.
John Darling VanSchoick, *a*	Jackson
Emery Donald Winfield	Mason
Harold Edward Wisner	Ann Arbor
George Piper Wood	Springfield, Ill.

FIRST YEAR STUDENTS

Milner Shelby Ballard	Ann Arbor
Harold Joseph Brisbois	Detroit
John Harold Cobane, *a*	Detroit
Harold James Hyde, *a*	Detroit
Kenneth Thompson Knode, B.S., *Maryland Agricultural College*	Martinsburg, W. Va.
Clarence Andrew Kretzschmar	Detroit
Newell Eddy Lavely	Bay City
Allen Chronister Starry	Walla Walla, Wash.
William Ferdinand Weinkauf	Ypsilanti
James Ril Williams	Toledo, Ohio

College of Dental Surgery

FACULTY

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WARREN P. LOMBARD, M.D., ScD.
FREDERICK G. NOVY, M.D., Sc.D.
G. CARL HUBER, M.D.
LOUIS P. HALL, D.D.S.
EGBERT T. LOEFFLER, B.S., D.D.S.
MOSES GOMBERG, Sc.D.
S. LAWRENCE BIGELOW, Ph.D.
MARCUS L. WARD, D.D.Sc., *Dean*
CYRENUS G. DARLING, M.D.
RUSSELL W. BUNTING, D.D.Sc., *Secretary*
CHALMERS J. LYONS, D.D.Sc.
JOHN J. TRAVIS, D.D.S.
ROBERT B. HOWELL, D.D.S.
ELMER L. WHITMAN, D.D.S.
FRANK R. WOODS, D.D.S.
ALFRED J. SCHROEDER, D.D.S.
HERBERT S. BAILEY, D.D.S.
ROLLIN EDWARD DRAKE, D.D.S.

Demonstrators and Assistants

EWONDA BERNHARDINA SCHLENCKER, D.D.S.
MORRIS D. MACKOY, Ph.G., D.D.S.
CHARLES D. COLE, D.D.S.
OLIVER O. LEININGER, D.D.S.
REGINALD A. MACDONALD, D.D.S.
URA G. RICKERT, A.M., D.D.S.
ROBERT J. WELLS, D.D.S.

Special Lecturers

MILTON T. WATSON, D.D.S.
ALBERT J. HALL, D.D.S.

STUDENTS*

THIRD YEAR STUDENTS

John Abele	Troy, N. Y.
Arthur Floyd Anderson	Mears
Oliver Clark Applegate	Thorntown, Ind.
Charles Arthur Baribeau	Grand Ledge
Clarence Russell Barron	Detroit

---

* A dagger (†) preceding a student's name signifies that he has pursued studies, for the year or a part of the year, in another School or College of the University, indicated by an italic letter following the name, to-wit: *a*, College of Literature, Science, and the Arts; *e*, College of Engineering; *ea*, College of Architecture; *m*, Medical School; *l*, Law School; *p*, College of Pharmacy; *h*, Homoeopathic Medical School. The letter (without the dagger) indicates that the student is pursuing a combined curriculum, leading to a degree in each of the two.

David Joseph Bittker	Detroit
Roy R. Bixby	Ann Arbor
Clarence Joseph Bott	Rochester, N. Y.
Arsen Miras Boyajian, A.B., *Central Turkey College*	Marash, Turkey
Grover Charles Brockman	Romeo
John Gordon Brodie	Saint Thomas, Ont.
George Albert Brown	Detroit
Ned Daniel Leander Brown	Lansing
Stephens John Brown	Howell
Henry Edward Brunner	Bay City
Harold Kenneth Burch	Aspen, Colo.
Richard Hingston Burkhart	Batavia, N. Y.
Horace Butterfield Burr	Goshen, Ind.
Arthur B. Campbell	Grandville
Sprague Fenton Carpenter	Detroit
George Walsh Christiansen	Grosse Point Farms
Edward Allen Collacott	Ann Arbor
George Albert Cronk	Montour Falls, N. Y.
Paul Stevenson Crosby	Detroit
Wilfred Adams Davids	Detroit
Frederick William Dean	Detroit
Floyd Hermal DeCamp	Saint Anthony, Idaho
Ralph Arthur Denison	Durand
Theodore van Reenen Engels	Paarl, South Africa
Benjamin Joseph Eslick	Iron Mountain
Edward Dickinson Ettinger	Ann Arbor
Claude Leavern Evans	Battle Creek
Henry Bliss Felton	Malone, N. Y.
Leo Odo Finch	Flint
Frederick Cogswell Frank	Wayne
George Albert Frederick	Owosso
Robert McKinley Gardner	Harbor Springs
Frederick Gerbstadt	Wayne
Otha Edward Getts	Hemlock
Ross Templeton Getty	Indiana, Pa.
Paul Joseph Glugla	Antigo, Wis.
Hilliard William Goldstick	Detroit
Ward Goodwin Gordon	Ilion, N. Y.
Neal Donald Gotschall	Minerva, Ohio
Donald Stuart Graham	Albion
Glenn Arthur Graham	Lapeer
Carl Peter Griesmer	Wilkes-Barre, Pa.
Edwin Estebrooke Guerrier	Dundee
Arthur Earl Hammond	Owosso
Carl G. Handshaw	Mendon
John Gilbert Hapeman	Lowell
Arthur Sterling Harrison	Lapeer
Harry Jay Herrick	Ann Arbor
John Alexander Hickey	Bad Axe
Elmore Jacob Hoek	Holland
Alan Dean Honey	Saint Joseph
John Mortimer Hopkins	Detroit
William Milton Howard	Detroit
Dorothea Agnes Howes	Ann Arbor
Charles Edward Hubbard	Pontiac
Clare Charles Hugan	Ann Arbor
Ernest Victor Hughes	Massillon, Ohio
John Henry Hughes	Amasa
William Porter Hulett	Granville, N. Y.
Jesse Paul Jaxtimer	Greenville, Pa.
Harold Charles Kahn	Caldwell, Idaho
Edward Newcomb Kellogg	Wolcott, N. Y.
John Willard Kemper	Richmond, Ind.
Eugene Ghert Klaver	Grand Haven

Harry Kohn	Detroit
Treverton Evans Lewis	Plymouth, Pa.
Jay Henry Locke	Grand Haven
Clarence Leslie Loew	Burnips
Caryl Isabel Malcomson	Detroit
Clifton Gerald Maree	Johannesburg, South Africa
Orland Alfred Miller	Detroit
William Richard Milner	Windsor, Ont.
Lewis Henry Morrison	Detroit
Edward T. Mulder	Holland
Charles Thomas Murphy	Mount Morris
John Daniel Murphy	Mount Morris
James Garretson Murray	Herkimer, N. Y.
Daniel Bartlett Newton	Salamanca, N. Y.
James Edwin Oberlin	Mansfield, Ohio
Winfield Scott Osborn	Detroit
John Robert Pear	Saugatuck
Guy Devere Peters	Florence, Ont.
Fenimore Eddie Putt	Saint Johns
Walter James Reason	Pinckney
Albert James Richards	Detroit
Chester John Robertson	Saint Clair
James Kane Robinson	Muskegon
Richard A. Roelofs	Zeeland
Edison Easterday Rogers	Sault Ste. Marie
Raymond Robert Roussin	Cadillac
Lester Merrill Sanderson	Saint Charles
Morris Schiff	Sault Ste. Marie
Albert John Schmutzler	Mansfield, Ohio
Stanley John Slazinski	Bay City
Walter Barlow Steele	Muskegon
Ray Edmond Stevens	Big Rapids
Bertrand Clifton Styles, A.B., *Atlanta University*	Dawson, Ga.
Otis Leonard Sutherland	Owosso
Ward Joseph Taphouse	Corunna
Richard Hayman Tremper, A.B.	Portsmouth, Ohio
Frederick William Trigg	Youngstown, Ohio
Harold Andrew Truesdell	Burden, Kans.
William James Watkins	Detroit
Maximilian Luciene Weny	Allegan
Joseph Wilson	North Bangor, N. Y.
Maurice Lee Wood	Cass City
Harry Bender Wright	Niagara Falls, N. Y.

SECOND YEAR STUDENTS

Victor Adams 3rd	Little Falls, N. Y.
LaVerne Hayes Andrews	Ann Arbor
Levon Aaron Arozian	Detroit
Ernest Norman Bach, A.B., *Hillsdale College*	Hillsdale
Reame Leslie Bailey	Pontiac
Irving Ernest Baker	Peshtigo, Wis.
Roberto Celso Barbosa	San Juan, P. R.
Heman Earl Barlow	Grand Rapids
Glenn Royden Barnes	Elk Rapids
Frank Joseph Bauman	Mount Clemens
Herbert Leo Berger	Toledo, Ohio
Robert Vincent Bird	Cape Town, South Africa
George Karl Bolender	Sparta
Albert Lowell Brock	Milroy, Pa.
James Gerald Brown	Grand Rapids
John Fairman Bulmer	Youngstown, Ohio
Felix Samuel Burkholder	Milroy, Pa.

Michael Cornelius Cameron	Sault Ste. Marie
William Frazier Chadwick	Muir
Kegham Quarekin Chutjian	Petoskey
Frank Orville Clifford	Kokomo, Ind.
Albert Raymond Collins	Butte, Mont.
Harold Charles Cramer	South Rutland, N. Y.
Rex Perry Cranson	Bronson
Harte Erwin Deming	Jackson
Walter William Denig	Convoy, Ohio
John Edwin Dodge	Oakley, Kans.
George Daniel Drudge	Chelsea
Albertus Wynand Eksteen	Piquetberg, South Africa
Frederick Harold Essig	Dowagiac
Hiram Barney Fassett, Jr.	Bennington, Vt.
Henry Clarence Funkey, Jr.	Senter
Emerald J. Garlock	Wacousta
Earl August Gelhaar	Detroit
Kenneth Richard Gibson	Laurium
John Orton Goodsell, Jr.	Saginaw
Frank Anthony Gorman	Saginaw
William J. Goude	Middleport, N. Y.
William Henley Graham	Detroit
John Henry Haley	Ogdensburg, N. Y.
Gerald Graham Hall	Detroit
Signe Maria Hamalainen	Ann Arbor
Bidwell Cranfield Hansen	Butte, Mont.
Fredrick Joseph Henry	Marysville, Kans.
Richard Uno Hirwas	Gwinn
Paul John Holt	Butler, Pa.
Edgar Allan Honey	Kalamazoo
Lewis Edwin Hooper	Victoria
Bertram Victor Ingle	Cape Town, South Africa
Louis Manning James, Jr.	Ypsilanti
Harold James Jones	Altoona, Pa.
Victor Rowley Kaufman	Ionia
Francis Howard Kelly	Madrid, N. Y.
Harry Sibilla Lamlein	Port Huron
Dhilve Darwin Langlois	Detroit
Herbert Herman Lichtig	Mount Clemens
John Leonard Lundberg	Lansing
Albert MacDonald	Marshall
Robert Duncan MacDonald	Port Huron
Hendrik Jacobus Marais	Robertson, South Africa
Karol Jan Marcinkiewicz	Detroit
Clement Phillips Martin	Chase Mills, N. Y.
William Jennings Bryan Mason	Saginaw
Abie Robert Melcher	Kimberley, South Africa
Clarence George Miller	Detroit
Donald Lyle Mitchell	Leslie
Elwood Whitfield Morris	Perry
Corydon Sites Neeley	Paulding, Ohio
George Henry O'Connor	Potsdam, N. Y.
John Michael O'Leary	Cortland, N. Y.
Carl Otho Osborn	Montgomery
Moe Samuel Perlis	Toledo, Ohio
George Martin Peterson	Detroit
Verner Edward Peterson	Ashtabula, Ohio
Lowrie James Porter	Grand Rapids
Carlisle Baxter Rathbun	Wolcott, N. Y.
Clarence August Rebentisch	Grand Rapids
Albert George Riddering	Grand Rapids
Terry James Roberts	Maple Rapids
Robert Angus Ross	Detroit
Lennox Joseph Schmidt	Willowmore, South Africa

Albert August Seele	Wartburg, South Africa
George Frederick Sheffield	Bellevue, Ohio
Matthew Oscar Sivula	Ishpeming
Carl Elliott Smith	Detroit
Hilda Mary Smith	Detroit
Henry Starikoff	Detroit
Clayton Erwin Stevens	Ismay, Mont.
James Benjamin Somers	Rodney, Ont.
Frank William Stockton	Jamestown, N. Y.
Fillmore Ward Stolpe	Marquette
Oliver Milton Strong	Mitchell, S. Dak.
John Wright Sweet	North Baltimore, Ohio
William Mackinley Taylor	Flint
Earl Henry Teetzel	Detroit
Gerhard Emmanuel Thrun	Ann Arbor
Frederick Homer Tinsman	Ann Arbor
Peter Cooper Treleaven	Lansing
Hugh Herrick Tremper	Portsmouth, Ohio
Millard Ray Twiss	Java, N. Y.
John Anthony Vanden Bosch	Grand Rapids
Frederick Albert Van Riper	Hartford
Francis Bulkley Vedder	Ann Arbor
Perry Van Whitaker	Flint
Max Wilton Williams	Owosso
Newlands Archibald Williams	Port Huron
William Henry Errol Williams	Norway

FIRST YEAR STUDENTS

Charles Frederick Adam	Chester, W. Va.
George Krikor Ansurian	Detroit
Stephen Glenn Applegate	Thorntown, Ind.
Don Carlos Arner	Three Rivers
Omer Bernard Aubin	Peshtigo, Wis.
John Lloyd Barnett	Ann Arbor
Harry E. Barrows	Ann Arbor
Wilna Jennie Bartlett	Ann Arbor
Earl Walter Beach	Kalamazoo
Nelson Andrew Beeckel	Vermilion, Ohio
Armin Herdt Boehnlein	Highland Park
Edward Burton Bowerman	Romeo
George William Brands	Montrose, Pa.
John Brower, Jr.	Hamilton
Robert Kennard Brown	Flint
Wilbert George Burrows	Detroit
Frederick Wayne Burton	Ypsilanti
Leo Anthony Cadarette	Sandwich, Ont.
Philip Augustus Callahan	East Las Vegas, N. Mex.
Paul Ewert Cavanagh	Lake City
Martin Herman Cnossen	Holland
David Cohen, A.B., *University of Cape of Good Hope*	Oudtshoorn, South Africa
James Theodore Cole	Corunna
Russell Elmer Curtis	Ionia
Dudley Allen Daniels	Cleveland, Ohio
Johannes Michael Dönges	Hoopstad, South Africa
Kenneth Culver Espie	Jonesville
Clarence William Forster	Dearborn
Benjamin Edwin Franklin	Midland
Charles Floyd Furber	Lakeview
James Dwight Glover	Wayne
Francisco Honorato de Goenaga	San Juan, P. R.
Henry Joseph Goodman	Ann Arbor
Jesse Ray Guy	Nashville

Chauncey Taylor Hall	Detroit
Robert LeRoy Hatcher	Ann Arbor
John Hayward	Johannesburg, South Africa
Nicolaas Hofmeyer van Heerden	Ladyland, South Africa
Harold Burwell Hinchman	Muskegon
Solomon Hirschfield	Prieska, South Africa
Stewart Clarence Hueston	Detroit
Maurice David Immerman	Cape Town, South Africa
Jenny Elizabeth Jacobs	Kimberley, South Africa
Albert Dority Kathan	Syracuse, N. Y.
Ray Stanley Kellogg	Battle Creek
William Charles Kendell	Chatham, Ont.
William Miller Kirkland	Battle Creek
John Leithead Knapman	Detroit
Robert Stanley Kuehn	Detroit
Marmaduke Anthony Larke	Rogers
Wilfred Joseph Lassaline	Sandwich, Ont.
Curtis Claud Later	Rigby, Idaho
Conrad Nathaniel Lau	Ann Arbor
Frederick Abel Lavery	Chateaugay, N. Y.
Harold Glenn Lewis	Muskegon
George Cornelius Heinrich Lubke	Durban, South Africa
Christian Rabie Malan	Cape Town, South Africa
Barnett Malbin	Mount Clemens
Fred Marian Marsh	Pontiac
Frank Wells Mercer	Chester, W. Va.
Russell Dewey Merritt	Ecorse
Marion Hess Miars	Berrien Center
Charles Sherman Miller	Clare
Lyman Gurden Mixer	Muskegon
William Henry Moir	Fredonia, N. Y.
Ralph Walter Moore	Stanwood
William Belton Morden	Port Huron
Clifford Theodore Nelson	Sparta
Howard Arthur Nelson	Lima, Ohio
Frank Taylor Nisbet	Saint Thomas, Ont.
Bertha Lorraine Olsen, A.B.	Ishpeming
Charles Walter Oster	Rochester, N. Y.
Melvin Ernest Page	Ann Arbor
Robert Duglas Pelham	Detroit
Carlton James Powers	Marshall
Maxwell Thomas Purchiss	Nashville
Howard Wilson Raub	Olean, N. Y.
Ralph Wallace Reese	Mannington, W. Va.
Edward Lawrence Robb	Linden
Harry Joseph Rennell	Manistee
Francis William St. Louis	Ford City, Ont.
Jacob Schaffer	Newark, N. J.
Alvin Charles Schrader	Dunkirk, N. Y.
Otto Theodore Schwartzbek	Bryan, Ohio
Richard Albert Sell	Adrian, Minn.
James Clements Shanks	East Orange, N. J.
Harvey Douglas Shaw	Montgomery, Ala.
Gabriel Gideon Smit	Barrydale, South Africa
Harry Disque Smith	Sedalia, Mo.
Haydon Artell Smith	Bellevue
Leonard de Spelder	Ann Arbor
David Tybutus Sundstrom	Iron Mountain
Earl Burten Swift	Ann Arbor
Elizabeth Snyder Swift	Ann Arbor
Stanley Eugene Teifer	Trenton
Paul Stephanus Theron	Tulbagh, South Africa
Norman Frederick Thomssen, A.B.,	Rochester, N. Y.
Ignatz George Uhrie	Battle Creek

Louis Routzahn Ulrich	Three Rivers
Pedro Genaro del Valle	San Juan, P. R.
Roy Alvin Vanderlinde	Muskegon
Susanna Elizabeth de Villiers	Wellington, South Africa
Earl Harry Walworth	Battle Creek
Leslie Grant Wilson	Ann Arbor
Russell Gilbert Woods	Watford, Ont.
Wilhelmina Yeretsky	Chicago, Ill.
Joseph Augustine Zastrow	Lapeer

FIRST YEAR STUDENTS

FOUR YEAR CURRICULUM

†Carl Baccaro, *a*	Newark, N. J.
Louis Braun	Detroit
Stanley Charles Brown	Ithaca
Jeremiah Edward Buckley	Mount Holly, Vt.
Clarence James Clemo	Echota, N. Y.
Floyd Byron Crill	Ann Arbor
†Donald Benjamin Darling, *a*	Ann Arbor
Frederick Aruti Dimas	San Juan, P. R.
Elmer Randolph Drevdahl	Manistique
Marcus Watson Frost	Muskegon
Anthony Francis Gorham	Ashley, Pa.
Lloyd Russell Hirth	Chelsea
Herman Singley Horn	Bellefontaine, Ohio
Louis Lathrop Hyde	Nashville
Arnold Joseph Labbe	Canal Fulton, Ohio
Oscar Hermann Lubke	Durban, South Africa
Leo Thomas McQuillan	Chelsea
Harry Thomas McMahon	Detroit
Malin Dewey Martin	Powell, Pa.
William John Miner	Detroit
George Mitchell	Huntington, W. Va.
Lloyd Homer Parks	Detroit
John McLauchlan Parsons	Chicago, Ill.
John Cornelius Porter	Hughesville, Mo.
George Bryson Riker	Fort Wayne, Ind.
Rafael B. Saint Villiers	Vieques, P. R.
Ockert Dirk Jacubus van Schalkwyk	Trompsburg, South Africa
Nicholas Orvil Scheidler	New Lothrop
Charles Cowan Schonleber	Corning, N. Y.
Paul Frederick Siegel	Cleveland, Ohio
Howard James Stansfield	Detroit
Schalk Izak Burger de Villiers	Wellington, South Africa
Harry Charles Vorys	Lancaster, Ohio
Omer Charles Williams	Corunna
James Francis Wozniak	Posen

SPECIAL STUDENT

Francis Pritchett Burchell, D.D.S., *American College of Dental Surgery*	Jackson

Graduate School

FACULTY

ADMINISTRATIVE OFFICERS

HARRY B. HUTCHINS, LL.D., *President*
ALFRED H. LLOYD, Ph.D., *Dean*

Executive Board

VICTOR C. VAUGHAN, M.D., Ph.D., Sc.D., LL.D.
HENRY C. ADAMS, Ph.D., LL.D.
ROBERT M. WENLEY, D.Phil., ScD., Litt. D., LL.D.
FRED N. SCOTT, Ph.D.
ALEXANDER ZIWET, C.E.
HERBERT C. SADLER, Sc.D.
JESSE S. REEVES, Ph.D.

STUDENTS*

John Abram Aldrich, A.B., *Albion College*. M.S., *ss* — Ann Arbor
  Astronomy
Albert Allen, A.B., *ss* — Ann Arbor
  Political Science
Rolland Craten Allen, A.B., *University of Wisconsin*, A.M., *ibid*, *abs*
  Geology — Lansing
Felipe Saldivia Altamirano, B.S. — Valdivia, Chile
  Naval Architecture
Yancey Roberts Altsheler, *sp*, *a* — Louisville, Ky.
Joseph Bruce Anderson, A.B., *University of Wooster*, *ss* — Tusculum, Tenn.
  Chemistry
Simeon Duval Anderson, *a* — Geneseo, Ill.
  Forestry
Harold Orlin Andrew, B.Ch.E. — Springfield, Mass.
  Chemical Engineering
Ovidio Benedict Apeseche, A.B., *National College of San Juan, Argentine*, B.S. (C. & I.E.) *Colorado Agricultural College*, June, 1917, *sp* — Buenos Aires, Argentine
Belle Arbour, A.B., A.M., *sp*, *ss* — Kalamazoo
Anna Criswell Arbutknot, B. S., *Geneva College*, A.M., *Western Reserve University*, *sp*, *ss* — Cleveland, Ohio
Robert Samuel Archer, B.Ch.E., *s* — Detroit
  Chemical Engineering
Floyd Elmer Armstrong, A.B., A.M., *ss* — Ann Arbor
  Economics
Henry Herbert Armstrong, A.B., A.M., Ph.D., *sp*, *ss* — Springfield, Mo.
Jeannette Armstrong, *sp*, *a* — Ann Arbor
Margaretha Ascher, A.B., A.M., *University of Chicago*, *abs* — Saginaw
  German

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* The department of specialization selected by candidates for an advanced degree is indicated under their respective names. Students not candidates for a degree are marked *sp*. Unmarked names indicate students enrolled during the academic session of 1916-1917; those with *ss* were members of the Summer Session of 1915 only; names marked with *s* indicate students who were enrolled in both the Summer Session of 1916, and the academic session of 1916-1917; *abs* shows that the student was permitted to complete some courses in absentia.

Wayne Jason Atwell, A.B., *Nebraska Wesleyan University*, A.M., *s*
Anatomy — Ann Arbor
Edith Dean Austin, A.B., *g, ss* — Detroit
French
Sarah Davina MacKay Austin, A.B., *University of Illinois*, M.S., *abs*
Psychology — Saint Paul, Minn.
Mark Bailey, A.B., *Yale University* — Escanaba
Oratory
Rest Russell Baker, *sp, e* — Williamsport, Pa.
Rose Evelyn Baker, Ph.B., *Cornell College, sp, ss* — Mechanicsville, Iowa
John William Baldwin, A.B., *Lebanon University*, A.M., *s* — Lebanon, Ohio
Mathematics
Lois Rae Banfield, A.B., *sp, ss* — Ann Arbor
Lee Edward Banghart, B.S.E. — Ypsilanti
Mechanical Engineering
Vera Mabel Barker, A.B., *ss* — Grand Rapids
English
Raymond Walter Barnard, A.B., *sp* — Detroit
Harry Carleton Barnett, A.B., Dartmouth College — Newbury, Vt.
French
Harvey Earl Barrett, B.S.E. — Grand Rapids
Naval Architecture
Herbert Hall Bartlett, B.C.E. — Coldwater
Civil Engineering
Cleburne Ammen Basore, B.S., *Alabama Polytechnic Institute*, M.S.,
ibid, Chemistry — Birmingham Ala.
Georgiana Bassett, A.B., *Olivet College, ss* — Union City
History
Henry Jewell Bassett, A.B., *Maryville College*, A.B., *Princeton*
University, A.M., *Maryville College, abs* — Maryville, Tenn.
Latin
Irving Miles Bassett, A.B., *ss* — Coldwater
German
John Watson Beach, A.B., *abs* — Cameron, Mo.
Latin
Austin Henry Beebe, A.B., *Albion College, ss* — Ypsilanti
Chemistry
Arthur Emmons Bellis, A.B., M.S., *ss* — Laramie, Wyo.
Physics
Clarence Willard Bemer, A.B., *Albion College, ss* — Sault Ste. Marie
Mathematics
Leray Doig Benedict, A.B., *ss* — Turin, N. Y.
Economics
Albert Arms Bennett, A.B., *s* — Ann Arbor
English
Standard Gustaf Bergquist, A.B., *ss* — Ironwood
Zoology
Gordon Alger Bergy, B.S. (Phar.), M.S., *sp, ss* — Caledonia
Bert Ira Beverly, A.B. — Ann Arbor
Psychology
Leon Cleaves Bibber, B.Mar.E. — Portland, Me.
Naval Architecture
Susan Dora Biethan, B.L., *Mills College, sp* — Blackfoot, Idaho
Frederick Clifford Binnall, B.S. (Chem.), *State University of Iowa*
Chemical Engineering — Woodbine, Iowa
Wesley Bintz, B.C.E. — Ann Arbor
Civil Engineering
Edward Jacob Bird, A.B., *ss* — Saint Johns
Chemistry
Harriet Louise Bird, A.B., *s* — Ann Arbor
Rhetoric
Lynn Stanford Blake, B.S. (Phar.), *ss* — Coloma
Pharmacy

Frank Nelson Blanchard, A.B., *Tufts College, s* — Tufts College, Mass.
Zoology
Galo Wenceslao Blanco, B.S., M.S., *s* — San Juan, P. R.
Chemistry
George Jordan Blazier, A.B., *Marietta College, ss* — Marietta, Ohio
Philosophy
George Moyer Bleekman, B.S.E. — Oneida, N. Y.
Civil Engineering
Frederick Franklin Blicke, B.S., *s* — Bucyrus, Ohio
Chemistry
Eric Edwin Blomgren, B.C.E. — Norway
Civil Engineering
Oscar Leo Bockstahler, A.B., *Baldwin-Wallace College, ss* — Arcola, Ill.
German
Sarah Mildren Boland, A.B., *Western College, sp, ss* — Paris, Ill.
Paul Edward Bollenbacher, A.B., *ss* — Celina, Ohio
German
Lucius Comstock Boltwood, A.B., *Yale University, sp, l* — Grand Rapids
Mary Campbell Bonner, A.B., *sp* — Ann Arbor
Orlan William Boston, B.M.E. — Ann Arbor
Mechanical Engineering
Harold Mathew Bowcock, B.S. — Springfield, Ill.
Physiological Chemistry
Pearl Katherine Bowman, B.S., *Albright College,* A.B., *ss* — Myerstown, Pa.
Sociology
Charles Ward Boyce, A.B., *sp* — Ann Arbor
Albert Bradley, B.S., *Dartmouth College,* A.M. — Rockville Centre, N. Y.
Economics
George Joseph Brilmyer, B.S., *Alma College, ss* — Milford
Zoology
Edgar Clay Britton, A.B. — Rockville, Ind.
Chemistry
Erle Arlington Brock, B.S., University of California — Sacramento, Cal.
Chemical Engineering
Wilber Esmond Brotherton, Jr., A.B., *s* — Detroit
Botany
Carl Richards Brown, A.B., *University of Kansas,* A.M., *ibid, sp* — Lawrence, Kans.
Jessie Mary Brown, A.B., *Mount Holyoke College, ss* — Ann Arbor
English
Robert Ellsworth Brown, A.B., *University of Illinois,* M.S.P.H., *sp* — Danville, Ill.
Ruth Isabel Brown, A.B. — Ann Arbor
Mathematics
Mary Gertrude Buck, A.B., *sp, ss* — Hillsdale
Elizabeth Frayer Burnell, A.B., *Lake Erie College* — Des Moines, Iowa
Mathematics
Beryl Iles Burns, AB., *University of Missouri* — Ann Arbor
Anatomy
Dwight Grafton Burrage, A.B., *Amherst College,* A.M., *ibid, sp, ss* — Crete, Nebr.
Audley Berlyn Calkins, A.B., *Hillsdale College, ss* — Wayland
English
Ruby Irene Calkins, A.B., *Hillsdale College, ss* — Wayland
English
Flora Belle Campbell, A.B., *Ohio Northern University, sp, ss* — Radcliff, Ohio
Harry Linn Campbell, B.Ch.E., *abs* — Bay City
Chemical Engineering
Helen Conner Campbell, B.S., *Northwestern University, ss* — Chicago, Ill.
English
Henry Clyde Campbell, A.B., *Olivet College, sp* — Ann Arbor
George Townsend Cantrick, A.B., *Adrian College, ss* — Adrian
History
Donald Eugene Carey, A.B., *sp* — Vermontville

Elizabeth Carey, A.B., *University of Minnesota,* A.M., *ibid, sp* Ypsilanti
Arthur B. Carr, A.B., *Albion College, ss* Springfield, S. Dak.
Education
Eber Malcolm Carroll, A.B. Ann Arbor
History
Howard Leslie Carroll, *sp, e* Lockport, N. Y.
Harry Clyde Carver, B.S. Ann Arbor
Actuarial Science
William S. Caswell, A.B. Birmingham
History
Florence Marilla Cate, Ph.B., *Morningside College,* A.M., *sp, ss* Winfield, Kans.
Stella Nora Cathcart, A.B., *Western Maryland College, ss* Kalamazoo
Political Science
Herbert Ezra Chamberlain, A.B., *Albion College, sp, ss, m* Howell
Katherine McFarlane Chamberlain, A.B., *ss* Port Huron
Chemistry
John Sharpe Chambers, B.S., *Kentucky State University,* M.S. Ann Arbor
Public Health
Wyszie Shionyu Chang, A.B., *a* Yung-ning, China
Philosophy
Grace Chapel, A.B., *Olivet College, sp, ss* Ludington
Ta Che Chen, *Nanyang University* Peking, China
Electrical Engineering
Te Fen Cren, B.C.E., M.S.E., *sp* Kashan, China
Homer Cherrington, A.B., *Ohio University,* B.S. (Educ.), *ibid, sp* Marietta, Ohio
Denis G. Clancy, Ph.B., *Hillsdale College, ss* Hillsdale
Education
George Douglas Clapperton, A.B., *Amherst College* Grand Rapids
Philosophy
Harry Leroy Clark, A.B., *s* Ann Arbor
Anatomy
Willis Henry Clark, A.B., M.S., *sp, s* Detroit
Lloyd Loring Click, B.S., *University of Tennessee, s* College Station, Texas
English
Frieda Cobb, A.B., *University of Illinois* Falls Church, Va.
Botany
Melissa Hazel Cobb, B.S., *ss* Ann Arbor
Chemistry
Harold Steen Coil, A.B., *Marietta College,* A.M., *sp, ss* Marietta, Ohio
Roy Jefferson Colbert, A.B., *DePauw University* Toledo, Ohio
Sociology
Edith Cold, A.B., *Hillsdale College* Lakewood, Ohio
Semitics
George Harris Collingwood, B.S., *Michigan Agricultural College* East Lansing
Economics
Myra Mae Collinson, A.B., *sp, ss* Port Huron
Elisabeth Margaret Colliver, B.S., *Purdue University,* M.S., *ibid, sp* Greencastle, Ind.
Helen F. Cone, A.B., *Olivet College, s* Caro
Oratory
Allen Clifton Conger, A.B., *Ohio State University,* M.S., *ibid, sp, ss* East Lansing
Albert Degolyer Conkey, A.B. Benton Harbor
Rhetoric
Louise Ward Conklin, A.B., *abs, s* Ann Arbor
Music
Florentine Wilhelmina Cook, *sp, a* Hillsdale
Harry Carman Coons, B.C.E. Findley, Ohio
Civil Engineering
Clyde Edwards Cooper, A.B. Ann Arbor
Geology

Leigh Guillot Cooper, A.B., A.M., *abs* Detroit
History
James Murle Cork, B.S. Yale
Physics
Joseph Henry Corns, A.B., *ss* Detroit
Education
Leafy Jane Corrington, A.B., *Miami University* Mason, Ohio
Botany
Victor Edwin Cory, B.S., *Heidelberg University, sp, ss* Detroit
Frank Boyd Cotner, A.B., *s* Strawberry Ridge, Pa.
Botany
Joseph Ray Cotton, A.B., *sp, ss* Walkerton, Ind.
Roy Burford Cowin, *sp* Mesick
Floyd William Crawford, A.B., LL.B., *ss* Three Rivers
Education
George Byron Crawford, A.B., *ss* Ann Arbor
Political Science
Janet Barbara Crawford, A.B., *Ohio State University, sp, ss* Franklin, Pa.
Weldon Frank Crossland. A.B., *Nebraska Wesleyan University*, A.B.,
Oxford University, England, sp Detroit
William Henry Cullum, Jr., A.B., *Albion College*, A.M., *University of Illinois* Detroit
Mathematics
Ivan Norman Cuthbert, B.E.E. Ann Arbor
Mechanical Engineering
Ethel May Davey, B.S. (Educ.), *Ohio State University, sp, ss*
Dayton, Ohio
Norman Hart Davidson, B.S.E., *sp, e* Iron Mountain
Ward Follett Davidson, B.S.E. Iron Mountain
Electrical Engineering
Darrell Haug Davis, A.B. Detroit
Geology
James Ethelbert Davis, M.D., *Detroit Medical College*, A.M., *s* Detroit
Pathology
Stanley Pettee Davis, *e* Youngstown, Ohio
Civil Engineering
Aurie Jerome Dean, A.B., *Olivet College, sp, ss* Iron Mountain
John John DeBoer, A.B., *Hope College*, A.M. Jenison
Philosophy
Arthur Douglas DeFoe, A.B., *ss* Houghton
Rhetoric
Ezra Amos Deneen, A.B., *ss* Imlay City
Chemistry
Thomas Burdon Dimmick, B.S., *Michigan Agricultural College*
Civil Engineering East Tawas
Robert James Dobson, A.B., *Albion College*, A.M., *sp, ss* Parma
Russell Alger Dodge, B.S.E. Whitmore Lake
Civil Engineering
Edmund Leopold Dolewczynski, A.B., *Johns Hopkins University, ss*
Education Cambridge Springs, Pa.
Paul Dorweiler, B.S., *State University of Iowa, abs* Pittsburg, Pa.
Actuarial Science
William Carlos Dowd, B.S. (Chem.), *s* Fillmore, N. Y.
Chemistry
Walter Rhodes Drury, B.C.E. Ann Arbor
Civil Engineering
Ray Lee Edwards, A.B., *Oberlin College*, A.M., *Ohio State University*,
ss Parkville, Mo.
Physics
Benjamin Rudolph Eggeman, A.B., LL.B., *ss* Ithaca
German
Arnold Henry Eggerth, A.B., *ss* Ann Arbor
Anatomy

William Henry Egly, A.B., *ss* English	Geneva, Ind.
George Marion Ehlers, A.B. Geology	Baltimore, Md.
Willard Shepard Eldridge, *sp, e*	Detroit
Grace Frances Ellis, B.S., *Olivet College,* B.L., *ibid, abs* Zoology	Grand Rapids
Manley Mills Ellis, A.B., *ss* Chemistry	Saugatuck
Herbert William Emerson, B.S. (Phar.), M.D. Public Health	Ann Arbor
Emma Jane Ennis, Ph.B., *Hiram College, sp*	Bracebridge, Ont.
Frederick Louis Erickson, A.B., *ss* Philosophy	Escanaba
Leon Simpson Evans, A.B., *sp*	Ann Arbor
Porter Henderson Evans, B.E.E. Electrical Engineering	Erie, Pa.
Edward Simpson Everett, A.B., A.M. Rhetoric	Ann Arbor
Lewis Lee Everett, B.S., *Muskingum College, ss* Education	Lisbon, Ohio
Frances Anna Exelby, A.B., *Albion College, ss* History	Dearborn
Bernard Fantus, M.D., *University of Illinois, ss* Pharmacology	Chicago, Ill.
Florence Fenwick, *sp, a*	Ann Arbor
Margaret Ferguson, A.B., *Vassar College, ss* Mathematics	Buffalo, N. Y.
Richard Oscar Ficken, B.S., *Moores Hill College,* A.M., *University of Cincinnati* German	Moores Hill, Ind.
Hope Fisher, A.B., *Vassar College,* A.M., *Columbia University* Rhetoric	Marion, Ohio
Mabel Margaret Fitch, A.B., *Kalamazoo College, sp, ss*	Ludington
Fred Kurtland Fleagle, A.B., *s* Education	Saint Johns
Capen Alexander Fleming, A.B., *Southwestern College* Municipal Administration	Ann Arbor
Paul Otto Flemming, A.B., *Baldwin-Wallace College, ss* Greek	Lansing
Anna Ford, Ph.B., *University of Chicago,* B.L., *University of California, ss* German	Berkeley, Cal.
Guy Fox, A.B., *Albion College, sp, ss*	Coldwater
Helen Lois Frank, A.B., *Wellesley College* Rhetoric	Dayton, Ohio
John Brandon Franks, *e* Civil Engineering	Leavenworth, Kans.
Nellie M. Free, A.B., *Juniata College* German	Huntingdon, Pa.
Florence Agnes Frew, A.B., *Oberlin College* Latin	Rahway, N. J.
Theodore Edward Friedemann, B.S., *Oklahoma Agricultural and Mechanical College, ss* Chemistry	Stillwater, Okla.
Ray Clarence Friesner, A.B., *Ohio Wesleyan University* Botany	Bremen, Ohio
Reid Stanger Fulton, A.B., *s* Economics	Carsonville, Va.
Nobu Furuya, A.B., *Oxford College for Women* Sociology	Izuhara, Japan
Edith Christine Gabriel, A.B., *ss* German	Owosso
Ina Virginia Gabriel, A.B., *sp, ss*	Owosso

Helen L. B. Gage, B.S., *sp, m* Wixom
Frederick McMahon Gaige, B.S. Ann Arbor
Zoology
William McKee German, A.B., *ss* Pittsburg, Pa.
Bacteriology
Fredericka Botsford Gillette, A.B., *sp* Ann Arbor
Clifford Conklin Glover, B.S. (Phar.), M.S., *sp, ss* Ann Arbor
Leslie Drew Goddard, B.C.E. Ann Arbor
Civil Engineering
Valta Francis Goddard, A.B., *Maryville College, ss* Chassell
Education
Harold Samuel Elmer Goodfellow, A.B., *Albion College* Laurium
English
Robert Granville, A.B., *ss* Saginaw
English
Lucien Helm Greathouse, A.B., B.Ch.E. Washington, D. C.
Chemistry
Grace Green, Ph.B., *Olivet College, ss* Olivet
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Benjamin Henry Griesemer, B.S., *Northwestern College, ss* Bremen, Ind.
Botany
Stuart W. Griffin, A.B., *ss* Jackson
Chemistry
Thomas Morris Griffith, A.B., *Hillsdale College* Hillsdale
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Charles Hurlbut Griffitts, A.B., *Campbell College*, A.M., *University of Kansas* Ozawkie, Kans.
Psychology
Burton George Grim, A.B., A.M. Ann Arbor
Rhetoric
Watze Groen, A.B., *ss* Grand Rapids
History
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Anatomy
Howard Lee Haag, *sp, a* Ann Arbor
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Chemistry
Ruby Mariett Hall, A.B., *ss* Dexter
Botany
Clarence William Hallahan, A.B., *St. Lawrence University*, A.M., *ibid, sp* Canton, N. Y.
Roy William Hamilton, A.B., A.M., *sp* Ann Arbor
Herman Henry Hanink, B.S. (C.E.), *abs* Palos Park, Ill.
Civil Engineering
Margaret Eustis Hanson, *sp, a* Pontiac
Harold Leontine Harrington, A.B., *ss* Blissfield
Education
Gould Leach Harris, A.B., *Ohio State University*, A.M., *ibid, sp, ss* Columbus, Ohio
Pauline Harris, A.B., *abs, s* Pontiac
German
Albert Baird Hastings, *a* Evanston, Ill.
Chemistry
Roy Sanford Head, B.S., *ss* Jonesville
Botany
William Fairley Head, B.S., *Ohio Wesleyan University, sp* Ann Arbor
Milton Mack Heath, A.B., *University of Oklahoma, sp, ss* Norman, Okla.
John Hemenway, A.B., M.S., *ss* DeKalb Junction, N. Y.
Physics
José Maria Hernandez, B.S., *Ohio Wesleyan University, s* Quebradillas, P. R.
Spanish
James Hervey Herron, B.S. (M.E.), *abs* Cleveland, Ohio
Chemical Engineering

Harold Adam Hicks, B.M.E. Mechanical Engineering	Ann Arbor
Howard Rice Hill, A.B., *Carroll College,* M.S., *University of Illinois, sp, ss*	Chicago, Ill.
Justina Hamilton Hill, A.B., *Smith College* Bacteriology	Ware, Mass.
Theodore Case Hill, B.S.E., *e* Civil Engineering	North East, Pa.
Sarah Hincks, A.B., *Vassar College,* A.M. Rhetoric	Cambridge, Mass.
John Carl Williams Hinshaw, C.E., *Princeton University, sp*	New York, N. Y.
William Cullen Hirn, C.E., *Tri-State College* Civil Engineering	Spencerville, Ohio
Ching Tsang Ho, B.S. (Chem.), *a* Chemistry	Canton, China
Lynne Arthur Hoag, B.S., *m* Anatomy	Ann Arbor
Max Robertson Hodgdon, A.B., *ss* Latin	Birmingham
Fanny Bigelow Hogan, A.B. History	Ann Arbor
William Tinker Hollands, A.B., *sp*	Ann Arbor
Earle Bree Holman, *ss* History	Redridge
Edward Mark Honan, A.B., *Wabash College, s* Chemistry	Lebanon, Ind.
Thomas Edward Hook, A.B., *ss* Education	Holmesville, Ohio
Mabel Esther House, A.B., *ss* Latin	Homer
Bertha Josephine Howard, A.B., *Mount Holyoke College* Sociology	Chicopee Falls, Mass.
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Miriam Elberta Hubbard, A.B. Philosophy	East Aurora, N. Y.
Henry Dwight Hughes, A.B., *Olivet College, ss* English	Bellevue
Arthur Herman Huisken, B.S., *University of Illinois, ss* Chemistry	Chicago, Ill.
Minerva Agnes Hutchinson, A.B., *Rockford College,* A.B., *sp*	Capron, Ill
Albert Hyma, A.B., *ss* German	Grant
Elmer Samuel Imes, A.B., *Fisk University,* A.M., *ibid* Physics	Detroit
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Paul Wesley Ivey, A.B., *Lawrence College,* A.M., *University of Illinois* Economics	Oshkosh, Wis.
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William Harry Jellema, A.B., A.M. Philosophy	Holland
John Henry Jensen, A.B., *ss* Pharmacy	Aurora, Ill.
Alice Elberta Johnson, A.B., *a, s* German	Howell
Maurice Flower Johnson, B.S.E., *Michigan Agricultural College,* C.E., *ibid, ss* Mathematics	East Lansing
Grace Etelka Jones, A.B., *sp, ss*	Detroit

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Flora Ellen Judd, A.B., *ss* Oratory	Corunna
Amelia Rosea Kaden, A.B., *ss* Botany	Ann Arbor
Charles Emil Kany, *a* Romance Languages	Dolgeville, N. Y.
Harrison Manly Karr, A.B., *Albion College, ss* Oratory	Holly
Samuel Elias Katz, A.B., *a* Psychology	Ann Arbor
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Ivan Allen Kelly, A.B., *Transylvania College, ss* Mathematics	Georgetown, Ind.
Katherine Kelly, A.B., *ss* English	Bad Axe
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James Alexander Kerns, A.B. Greek	Mason
Ruth Carver Kingman, A.B., *Washburn College, ss* Spanish	Topeka, Kans.
Winifred Morse Kinne, A.B., A.M., *sp*	Ann Arbor
Ada Mabel Kirley, A.B., *Smith College, sp*	Utica, N. Y.
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Walter Norman Koelz, A.B., *Olivet College* Zoology	Waterloo
Mildred Kolb, A.B., *sp*	Battle Creek
Frank Frederick Kolbe, A.B., *l* Economics	Ann Arbor
Lena Jessamine Krakau, A.B., *ss* Oratory	Syracuse, N. Y.
Franklin Abram Kuller, A.B., *Dickinson College*, A.M., *ibid, sp, ss*	Alinda, Pa.
Ser Chung Kwok, *Nanyang University, s* Electrical Engineering	Shanghai, China
Winifred Blanche Laing, *sp, a*	Ortonville
Ralph Burt Lance, A.B., *s* Chemical Engineering	Mount Pleasant
Herman Carl Lange, A.B., *Olivet College, sp, ss*	Saginaw
Norbert Adolph Lange, A.B. Chemistry	Sandusky, Ohio
Charles Albert Langworthy, A.B., *Albion College*, A.M., *ibid, ss* English	Albion
Carl Downey LaRue, A.B., A.M., *abs, s* Botany	Syracuse, N. Y.
George Starr Lasher, A.B. Education	Plainwell
Ludwig Beethoven Lasko, *a* Forestry	New York, N. Y.
Rex Knight Latham, A.B., *Albion College, ss* History	Alton, Ill.
John Stuart Lathers, B.L., *ss* Oratory	Ypsilanti
Wanda Minne Laubengayer, A.B., German	Ann Arbor

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Calvin Lewis Legg, A.B., *University of Alberta,* A.M., *McMaster University*, A.M., *sp, ss* London, Ont.
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Paul Benjamin Line, B.S., *Albright College, ss* Myerstown, Pa.
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James Roy Locke, B.S., *State University of Iowa, ss* Detroit
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Ralph Robert Lounsbury, A.B., *sp* Ann Arbor
Henry Stephen Lucas, A.B., *Olivet College,* A.M., *Indiana University, sp, ss* Ross
Clinton Albert Ludwig, B.S. (Ag.), *Purdue University,* M.S. (Ag.), *ibid*
Botany Brookville, Ind.
Lulu Veronica Lusby, Ph.B., *sp, ss* Detroit
Ward Irving Lyons, Ph.B., *Adrian College,* A.B., *ibid, sp* Petersburg
Roy Kenneth McAlpine, A.B. Ann Arbor
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Katherine Seeley MacBride, A.B. Ann Arbor
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Frank J. McGrath, A.B. Charlotte
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Clifford Thomas McIntyre, *e* Saint Thomas, Ont.
Civil Engineering
Harriet Margaret Mackenzie, A.B., A.M., *sp* Ypsilanti
Ross Hanlin McLean, A.B., *Cornell University* Ann Arbor
History
Genevieve Emily McLouth, A.B., *sp, ss* Ann Arbor
Henry Evan McMullen, A.B., *University of Illinois, ss* Belleville
Education
Floyd Daniel McNaughton, A.B., *Albion College, ss* Carsonville
Sociology
Lindley Ward McReynolds, A.B., *Defiance College, ss* Sharpsville, Ind.
Zoology
Orin Edward Madison, A.B., *Albion College, s* Ovid
Chemistry
Benjamin Elisha Mallary, A.B., *Kansas State Normal School, s*
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Anna Robbins Manley, A.B., *University of Kansas, sp, ss*
Junction City, Kans.
Alice Louise Marsh, B.S., *Columbia University, ss* Detroit
Education
Edward John Martin, A.B., *s* Ann Arbor
Physics
Helen Mary Martin, A.B. Battle Creek
Geology
Edith Harvey Marvin, Ph.B., *Kalamazoo College, s* Ann Arbor
History

Harry Cooper Marvin, B.S., *Kalamazoo College,* B.S., *University of Chicago, s*	Actuarial Science	Ann Arbor
Wesley H. Mast, A.B., *North-Western College, ss*	History	Sebewaing
Bruno Meinecke, A.B., *University of Tennessee, s*	Latin	Atchison, Kans.
Lewis Leroy Mellor, A.B., A.M.	Astronomy	Guilford, Me.
Gertrud Agnes Miller, A.B., *Lake Erie College,*	English	Bay City
Mary Lincoln Miller, A.B., *sp, ss*		Uniontown, Pa.
Wesley Minnis, B.S., *University of Washington,* M.S., *ibid*	Chemistry	Seattle, Wash.
Frank Charles Mock, E.E., *Columbia University,* A.M., *s*	Physics	Brooklyn, N. Y.
Austin Edward Moden, A.B., *s*	Physics	Mount Clemens
Sophia Marie Moiles, A.B., *ss*	Botany	Saginaw
Robert Emmett Monroe, A.B., A.M., *ss*	Romance Languages	Lexington, Ky.
Vernie Alton Moody, A.B., *Meridian College,* A.M., *Tulane University*	History	Springville, Tenn.
Arthur Dearth Moore, B.S. (E.E.), *Carnegie Institute of Technology, sp*		Fairchance, Pa.
Charles Stellman Morgan, A.B., *sp, ss*		Detroit
Clara Henrietta Mueller, A.B., *ss*	German	Saginaw
John Henry Muyskens, A.B., *ss*	General Linguistics	Grand Rapids
Floyd August Nagler, B.S., *Michigan Agricultural College,* M.S.E.	Civil Engineering	Dowagiac
Kathryn Cornelia Nelson, A.B.,	History	Battle Creek
Theodore Nelson, Ph.B., *Alma College, ss*	Latin	Chicago, Ill.
Francis Deming Newbrook, B.S.F., *a*	Forestry	Buffalo, N. Y.
Frances Elizabeth Nichols, A.B., *Middlebury College,* A.M., *sp*		Warwick, Mass.
Irby Coghill Nichols, B.S., *University of Mississippi,* A.M., *ibid,* M.S., *University of Illinois, ss*	Mathematics	Eudora, Miss
Marjorie Hope Nicolson, A.B., *ss*	Philosophy	Detroit
Earl Michael Nisen, B.S. (C.E.), *abs*	Civil Engineering	Milwaukee, Wis.
George Charles Nothdurft, A.B., *Central Wesleyan College, sp*		Grass Lake
Peter Olans Okkelberg, A.B., *University of Minnesota,* A.M., *ibid*	Zoology	Ann Arbor
William Edgar Olds, A.B., *ss*	Education	Marshall
Martin J. Orbeck, C.E., *University of Minnesota*	Civil Engineering	Ann Arbor
Lurene Ruth Osborn, A.B., *Kalamazoo College, s*	Oratory	Kalamazoo
Manley Osgood, B.C.E., *sp*		Ann Arbor
Olive E. Outwater, A.B.,	Actuarial Science	Ann Arbor
Mary Palmer, A.B.	Fine Arts	Detroit
Alfred Garlock Papworth, A.B., *Alma College*	Zoology	Howell

Luther Augustine Park, A.B., *Roanoke College,* A.M., *University of Pennsylvania, sp, ss* Indiana, Pa.
Frederick E. Parsons, A.B. Grand Rapids
Rhetoric
Olin David Parsons, E.E., *Syracuse University,* A.B., *ss* Yonkers, N. Y.
Physics
Louia Arch Paschke, A.B., *sp, s* Jackson
Robert Frederick Paton, A.B., M.S., *s* Ypsilanti
Physics
William Andrew Paton, A.B., A.M., *abs* Ann Arbor
Economics
Haskell Riley Patton, A.B., *Westminster College, ss* Slippery Rock, Pa.
English
Felix Wladyslaw Pawlowski, *Certificat d'Etude, University of Paris,* M.S. Warsaw, Poland
Aerodynamics
Albert Becker Peck, A.B., *Syracuse University,* A.M., *s* Syracuse, N. Y.
Mineralogy
Harry Houston Peckman, A.B., *Hiram College,* A.M., *University of Chicago, sp, ss* West Lafayette, Ind.
Margaret Scott Pengelly, A.B., *Kalamazoo College, s* Kalamazoo
Botany
Nellie Louise Perkins, A.B., *abs* Benton Harbor
Psychology
Frederick William Peterson, A.B., *Lake Forest College,* A.M., *sp* Chicago, Ill.
Nicholas E. Peterson, A.B., *Albion College, s* Suttons Bay
Sociology
Everett Russell Phelps, A.B., *Clark College, s* Geneva, N. Y.
Physics
Otto Karl Philipp, *sp, e* Kalamazoo
Robert Phillips, A.B., *Albion College* Jackson
Sociology
Walter Henry Pielemeier, A.B., *ss* Chelsea
Physics
Sherwood Mortley Pinkerton, Jr., B.Ch.E., *sp, s* Toledo, Ohio
Joseph Franklin Pinnock, A.B., *Olivet College, ss* Charlotte
Physics
Paul Henry Piper, B.S., *m* Alamo
Public Health
George Augustus Pomeroy, B.S., *University of California, sp* Berkeley, Cal.
Enos Hyde Porter, A.B., *Indiana University* Detroit
Education
Katherine Cecilia Post, A.B., A.M., *sp, ss* Holland
Jacob John Powels, A.B., *Albion College, ss* Ada
Education
Ruth Lucille Powers, A.B., *Olivet College, ss* Vermontville
German
Bessie Leach Priddy, Ph.B., *Adrian College,* A.B., *ibid,* A.M., *s* Adrian
History
George Ellsworth Raburn, A.B., M.S., *sp, ss* Manhattan, Kans.
Antonio Palmeda Racelis, B.S.F., *University of the Philippines*
Forestry Lucena, P. I.
Norris Watson Rakestraw, A.B., *Stanford University, sp, ss* Stanford University, Cal.
Susan Miller Rambo, A.B., *Smith College,* A.M., *ibid* Easton, Pa.
Mathematics
Horace Patton Ramey, B.S. (C.E.), *abs* Chicago, Ill.
Civil Engineering
Harry George Raschbacher, B.S. (C.E.), *Purdue University,* C.E., *ibid, sp* Ann Arbor
Marie Indabelle Rasey, A.B., *abs* Ann Arbor
Rhetoric

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German — Ann Arbor
Ruth Raymond, B.S., *Simmons College, sp* — Buffalo, N. Y.
William Ober Raymond, A.B., *University of New Brunswick,* A.M.
English — Ann Arbor
Cora Daisy Reeves, A.B. — Ypsilanti
Zoology
James Morton Reid, *sp, e* — Ann Arbor
Beatrice Reynolds, A.B., *Columbia University* — New York, N. Y.
Economics
Margaret Ruth Reynolds, *sp, a* — Ann Arbor
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Education
Joseph Schober Richtig, B.S. — Ann Arbor
Chemistry
Eugene Alfred Riker, A.B., *Olivet College, sp, ss* — Flint
Herbert Spencer Ripley, B.S. (C.E.), *abs* — Worth, Ill.
Civil Engineering
George Robbert, A.B., *ss* — Zeeland
German
Charles Sumners Robinson, A.B., M.S. — East Lansing
Chemistry
James Wilson Robinson, B.Ch.E., *s* — Sturgis
Chemical Engineering
Antoinette Cornelia Robson, A.B., *ss* — East Lansing
German
Emma Louise Robson, A.B., *s* — Jackson
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Helen Henriette Marguerite Roelofs, A.B., *Hope College*
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Howard Dykema Roelofs, A.B., A.M. — Grand Rapids
Philosophy
Ada March Rogers, A.B., *Wellesley College, sp, ss* — Youngstown, Ohio
James Speed Rogers, A.B., A.M. — Hanover, Ind.
Zoology
Elgie Carl Rolfe, A.B., *s* — Ann Arbor
Physics
Lee Vincent Romig, A.B., A.M., *ss* — Ann Arbor
Physics
Goldie Rosen, A.B. — Muskegon
English
Pauline Rosenberg, A.B., *ss* — Omaha, Nebr.
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Henrietta Elizabeth Rosenthal, A.B., A.M., *sp, ss, l* — Ann Arbor
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Mathematics
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Edwin William Schrieber, A.B., *sp, ss* Saginaw
William Henry Schrieber, A.B. Michigan City, Ind.
Forestry
Ellen Dorothy Schulz, A.B., *ss* Saginaw
Botany
Claude William Schutter, *a* Ann Arbor
German
Harold Philippi Scott, A.B., A.M. Ann Arbor
Rhetoric
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Summer Session 1916

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[*] Italic letters following a name show that the student is attending the University in the year 1916-1917 and is enrolled in the College or School indicated: *a*, denoting College of Literature, Science, and the Arts; *e*, Colleges of Engineering and Architecture; *m*, Medical School; *l*, Law School; *p*, College of Pharmacy; *h*, Homoeopathic Medical School; *d*, College of Dental Surgery; *g*, Graduate School.

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Harriet Kathleen Conklin, *a*	Ann Arbor
Clarence Andrew Conley, A.B., *Grove City College*	Mars, Pa.
Teresa Agnes Connell, *Teacher, Nazareth*	Kalamazoo
Arthur Eaton Cook, *a*	Kendalls
Ernest Anderson Cook, A.B., *Student in Detroit University*	Fenton
Margaret Horton Cooley, *a*	Ann Arbor
Clyde Edwards Cooper, *g*	Ann Arbor
Benjamin Coplan, *a*	Escanaba
Joseph Zener Corey, *Teacher, Homer City, Pa.*	Indiana, Pa.
Alice Maude Corns, *Teacher, a*	Detroit
Clifford Egbert Corwin, A.M., *Marietta College, Teacher*	Marietta, Ohio
Edward William Cory, *a*	Blissfield
Blanche Rose Covey, *a*	Coldwater
Paul Donohoo Covey	Oshkosh, Wis.
Roy Burford Cowin, *g*	Mesick
Theodore Sullivan Cox, *a*	Washington, D. C.
Ethel Elvena Crandal, *a*	Ann Arbor
Ethel Tracey Crane	Saint Louis, Mo.
Rex Perry Cranson, *d*	Bronson
Earle Eugene Crawford, *Superintendent of Schools*	Choteau, Mont.
Ruth Warner Crawford, *Teacher*	Louisville, Ky.
William Clark Crawford, *Principal*	South Fork, Pa.
Glenn Stafford Crisp, *Teacher*	Alma
James Cobb Crittenden, *Teacher*	Portland
Grace Crockett, *a*	Wailuku, Hawaii
Margaret Elizabeth Crockett	Indianapolis, Ind.
Arthur Earl Cross, *Superintendent of Schools, a*	Saint Ignace
Gertrude Ethel Culp, *Teacher*	Constantine
Rex Barnard Cunliffe	Detroit
Claude Dale Curtiss, *Teacher*	Detroit
Homer Leo Dalton, *a*	Frankfort, Kans.
Donald Benjamin Darling, *a, d*	Ann Arbor
Leihla May Davenport, *Teacher*	Birmingham
Forrest Dean Davidson, *Superintendent of Schools, Trout Creek*	Mount Pleasant
Frank Howell Davidson	Mount Pleasant
Sanna Deniston	Peru, Ind.
Gail Ernest Densmore, *a*	Mason
Emerson De Spelder, *a*	Ann Arbor
Leonard De Spelder, *d*	Ann Arbor
Harry Herbert Despond, *a*	Ann Arbor
Florence Hannah Depew, *Teacher, Dexter*	Ada
Romeo De Tomasi	Detroit
Murray McColl Dewar, *Student in Detroit College of Medicine*	Cedar Springs
Lena Maude DeWaters	Flint
Mary Louise Dickie, *Teacher*	Minneapolis, Minn.
Robert Richard Dieterle, *a*	Ann Arbor
Ramon Verity Dixn, *a*	Bay City
Eva Lillian Dockeray, *Teacher, a*	Grand Rapids
Marie Donegan, *a*	Ann Arbor
Harry Edwin Douglas, B.S., *Principal*	Alpena
Nellie Frances Dowling, *Teacher*	Westernport, Md.
Edgar Fielding Down, *Principal*	Highland Park
Gladys Estella Draper, *a*	Grand Rapids
Earl Sylvester Drehmer	Mount Pleasant
Martin James Dunkirk, *Teacher*	Benton Harbor
Helen Therese Edmonds, *a*	Grand Rapids
Minnie Catharine Einfalt, *a*	Saginaw
Ruth Eleanor Elliot, *Student in Lake Erie College*	Cheboygan
Ernest Winstanley Ellis, A.B., *Toronto University*	Toronto, Ont.
William Austin Ellis, LL.B., *Detroit College of Law, Principal, a*	Detroit
Myrtle Nettie Elsenau, *Student in Northwestern University*	Rothbury

Clarence Epstean, *a*	New York, N. Y.
Carlos Sebastian Esteves, *a*	Aguadilla, P. R.
Emma Louise Evans, *Teacher*	Norwalk, Ohio
Edna Ethelrena Ezell, *Teacher*	Dallas, Texas
Jut Loong Fan	Hong Kong, China
Doris May Farnham	Spokane, Wash.
Frances Farnham, *Teacher*	Petoskey
Hilda Farrar, A.B., *Rochester University, Teacher*	Rochester, N. Y.
Lucius Wade Fast, *Superintendent of Schools, Albion*	Otsego
William Kenneth Faunce, *a*	Youngstown, Ohio
Augusta Lynch Feiner	Ann Arbor
Clarence Newton Ferguson, *a*	Sault Ste. Marie
Floyd Ferguson, *Teacher, Mount Pleasant*	Saginaw
John Thomas Ferguson, *m*	Mount Morris
Tom Alden Ferris, *a*	Highland Park
Daniel Bernard Feyan	Hubbardston
Lois Armyne Fischer, *a*	Ann Arbor
Florence Dwier Fitzpatrick, *a*	Philadelphia, Pa.
Robert Finletter Fitzpatrick, *a*	Philadelphia, Pa.
Vevah Audrey Flower, *Teacher*	Bellevue
Ralph Eugene Folz, *a*	Kalamazoo
Alice McCann Ford, *Teacher*	Big Rapids
Robert R. Forner	Munith
Glenn Clifford Forrester, *Teacher, Munising*	Empire
Harry Cadwallader Fortner, *a*	Catawissa, Pa.
Clarence Edward Foster	Grass Lake
Ruth Louise Foster	Ann Arbor
Helen Edith Fox, *a*	Jackson
Ruth Stiles Fox	Ann Arbor
Elsie May Frank, *Teacher, Saint Charles*	Ubly
Sigmund Frank, *a*	Detroit
Sarah Patton Frankenbush, A.B., *Tulane University, Teacher*	New Orleans, La.
Ellen Marie Fredrickson, *Teacher, Norway*	Stephenson
Horace Lester French, *a*	Lansing
Parker Townsend Frey, *a*	Ann Arbor
Emma Rosali Frick, Ph.B., *University of Chicago, Teacher, Cincinnati, O.*	Norwood, Ohio
Alfred Spalding Friedrich	Traverse City
Annabelle Norris Frink, *a*	Detroit
Fred Watson Frostic, *Superintendent of Schools*	Saint Charles
Ross Gilbert Frounich, A.B., *Syracuse University, Teacher, Woodward, Okla.*	Attica, N. Y.
Clem Allen Frye, *a*	Albion
Carrie Helen Fuerstenau, *a*	Saginaw
Arthur Gerald Gabriel, *a*	Detroit
Lydia Pearle Galloway, *Teacher*	Dayton, Ohio
Robin Adair Galloway	Miami, Fla.
Myron Elnathan Garner, *a*	Fredonia, Pa.
Edward Artley Gee, *Superintendent of Schools, Bellaire*	Detroit
Ormond Daniel Geib, *a*	Groton, S. Dak.
Samuel Geisenberger, Jr., *a*	Natchez, Miss.
Hyman Howard Gellert	Colchester, Conn.
Loretta Mary George	Wyandotte
Harley Lawrence Gibb, *Superintendent of Schools*	Capac
Florence Mary Gibson, *a*	Ann Arbor
Helen Jane Gibson, *a*	Ann Arbor
Kenneth Richard Gibson, *d*	Laurium
Herbert William Giessing, *a*	East Saint Louis, Ill.
James Franklin Giffen, Jr.	Wheeling, W. Va.
Fields Jasper Gilleo, *Principal, Pentwater*	Lakeview
Anna Gustina Glasman, *Teacher*	Pittsburg, Pa.

George Scott Gleason, A.B., *Cornell University, Instructor, Trinity College*	Glens Falls, N. Y.
Ralph John Gleichauf	Rochester, N. Y.
Minnie Goehring, *Student in Knox College, a*	Grand Island, Nebr.
Frank Roy Goetz, *a*	De Tour
Mary Rosamond Goff, *Teacher, Rochester, N. Y.*	Ann Arbor
Marshall Adelbert Goff, A.B., *Tri-State College*	Ann Arbor
Bertha Goldfrank	New York, N. Y.
Fred Goldfrank, A.B., *Harvard University, M. D., Columbia University, Teacher*	New York, N. Y.
Richard Goldsmith, *a*	New York, N. Y.
William Arthur Gonter, *a*	Charlotte
Frank Jewell Good, A.B., *Grove City College, Teacher, Aspinwall, Pa.*	Dayton, Pa.
Lillian Ruth Gordon	Ann Arbor
Paul Walker Gordon, *a*	Oquawka, Ill.
Richard Emanuel Gordon	Ann Arbor
William Hunter Gordon, *Superintendent of Schools*	Chassell
Inez Marie Gose, *a*	Hennessey, Okla.
Clifford Chesse Gracey, *Teacher, Hotchkiss, Colo., a*	Cass City
John Miller Graff, *m*	Black Lick, Pa.
Harland Brown Graham, *Student in University of Illinois*	Los Angeles, Cal.
James Graham, *Teacher*	Ada
Bertha Loomis Grant, A.B., *University of Cincinnati*	Cincinnati, Ohio
Mary Anne Gratiot, A.B., *University of Wisconsin*	Shullsburg, Wis.
Bessie Mae Gray, *Teacher*	Vassar
George Proudfoot Graybiel, *a*	Caledonia
Clarence Elijah Greene	Ypsilanti
Allen Thayer Greenman, *Principal, a*	Boyne City
Ella Agnes Griffin, *Teacher*	Grand Rapids
Mary Abbe Griswold, *Teacher, Chicago, Ill.*	Benton Harbor
Richard Gerveys Grylls, *a*	Detroit
Earl Edward Gudakunst, *a*	Saginaw
Karl Willard Guenther, *a*	Lansing
Frances Marie Guilford, *a*	Friendship, N. Y.
Roy Jefferson Gulick, *Teacher*	Alma
Herbert Alexander Gustin	Bay City
Howard Lee Haag, *a, g*	Rockford
Cordelia Laura Haagen	Saint Louis, Mo.
Jeanette Hagen, *Teacher, Concordia College*	Moorhead, Minn.
Andrew Comstock Haigh, *a*	Dearborn
Charles Everett Haines, *a*	Nashua, N. H.
Richard Vernon Haller, *a*	Wooster, Ohio
Chester Raymond Ham, *a*	Ann Arbor
Sue Cleveland Hamilton, *a*	Ann Arbor
Donald Henry Hammond, *Student in Olivet College, a*	Reed City
Carl Whitney Haner, *Teacher, Mancelona*	Sturgis
Bruce Alexander Harris, *a*	Wells
Ward Walter Harryman, *a*	Owosso
Althea Beatrice Hartig, *Teacher*	Frostburg, Md.
Albert Baird Hastings, *a, g*	Evanston, Ill.
Mary Amorette Hawley, A.B., *Teacher*	Bradentown, Fla.
Ada Tower Heath, *a*	Ionia
Milton Mack Heath, A.B., *University of Oklahoma, Teacher*	Norman, Okla.
Robert Francis Heatley, *a*	Detroit
Charles Everett Hebard, *Student in Detroit College of Medicine*	Grand Rapids
Otto John Heber, *Superintendent of Schools*	Hersey
Mauritz Gustaf Hedin, *a, m*	Ironwood
Miriam Heideman	Calumet
Frank Dewey Heigley	Braeburn, Pa.
Joseph David Heiman, *a*	Butte, Mont.

Junetta Christina Heinonen, *Teacher, Republic*	Negaunee
John Wendell Helfrick, *a*	Muskegon
Vernon Otis Heller, A.B., *Ohio State University, Teacher*	Cincinnati, Ohio
Ralph William Helmkamp, A.B., *University of Rochester, Teacher*	Rochester, N. Y.
Hazen Senter Helmrich	Detroit
Margaret Henderson, *a*	Ann Arbor
Mae Agnes Hennessey, *Teacher, Elmhurst, Ill.*	Saint Clair
Eleanor Emma Herring, A.B., *West Virginia University, Teacher, Morgantown, W. Va.*	Kingwood, W. Va.
George Rudolph Herrmann, B.S., *m*	Fort Wayne, Ind.
Bertha Anne Hesse, *a*	Saginaw
Grace Roberta Hesse, *a*	Ann Arbor
May Lula Hewitt, *a*	Grand Rapids
Stella Higgins, *a*	Bellevue
Byron John Hildinger	Woodbury
Zella Iris Hills, *Principal, a*	New Baltimore
Charles Bruce Hitch, *Teacher*	Bloomington, Ill.
Porter Ackley Hitchcock	Pontiac
Norman Amos Hixson	Parker's Landing, Pa.
Ching Tsang Ho, *a, g*	Canton, China
Lynne Arthur Hoag, B.S., *g, m*	Ann Arbor
Frederic Vincent Hodson, *a*	Escanaba
Cecilia Louise Hoehne, *Teacher*	Stanton, Nebr.
William Harry Hogan, *a*	Detroit
Minnie Myrtle Holderness, *Teacher*	Fordyce, Ark.
Clara Emma Hollingworth, *Teacher*	Brooklyn, N. Y.
Earle Bree Holman, *Superintendent of Schools*	Redridge
Esla Elizabeth Holmes	Ann Arbor
Merle Russell Hoon, A.B., *Westminster, College*	Mercer, Pa.
Ethelwynn Annette Hopkins, *Student in Macalester College*	Mankato, Minn.
Harold Dana Hopkins	Ann Arbor
Roy Cash Horine, *Teacher, a*	Howell
Albert Edward Horne, Jr., *a*	Detroit
Jennie Reid Horton, *Principal*	Cleveland, Ohio
Sarah Margaret Horton, *Principal*	Cleveland, Ohio
Katharine Hoyt	Kalamazoo
Margaret Kuhn Hoyt, *a*	Kalamazoo
Hsi-Chi Hsia, *a*	Nanking, China
Han Hsu, *Student in Oberlin College*	Hunan, China
Pao Hwang Hsu	Kiu-kiang, China
Leigh Graham Hubbell, *Teacher, Kendallville, Ind.*	Croswell
Theodore Huntington Hubbell, *a*	Detroit
Oscar Arthur Hund, A.B., *Baldwin-Wallace College, Teacher, Saltsburg, Pa.*	Marine City
Henry Hunderman, *m*	Grand Rapids
Siji Cherung Hung	Shanghai, China
Ethelyn Albright Hurst, *Teacher*	Schenectady, N. Y.
Lora Hussey, A.B., *Butler College, Teacher in Hamilton College, Lexington, Ky.*	Zionsville, Ind.
Roland Fountain Hussey, *a*	Ann Arbor
Herbert Edward Hutchinson, *a*	Chicago, Ill.
Edward Norbert Hyatt, *a*	Ann Arbor
Opal June Hyde, *Teacher*	Prairieville
Henry Earl Illick, *Student in Ohio Wesleyan University, a*	Ann Arbor
Philip M. Iloff, *a*	Honesdale, Pa.
Parepa Ingraham, *a*	Oak Park, Ill.
Paul Mills Ireland, *a*	Fort Sam Houston, Texas
Elizabeth Mansfield Irving, *Teacher*	Toledo, Ohio
George Austin Iverson	Lake City
Louise May Jackson, *Teacher, Boise, Idaho*	Stanton

Floyd East Jarvis	Memphis
Bruce Monat Jeffris, *Student in Brown University*	Janesville, Wis.
Alice Elizabeth Jenkins, A.B., *Goucher College, Teacher*	Scranton, Pa.
Emma Ferne Jensen	Fowlerville
Annis Jewell, *a*	Ann Arbor
Ethel Irene Johnson, *Principal, Milan*	Manistee
Ludwig Johnson	Empire
Olga Marie Johnson	Ludington
Edna Johnston	Columbus, Miss.
Ethel Dell Johnston, *Teacher, Stanton, Nebr.*	Alliance, Nebr.
Harold James Jones, *d*	Altoona, Pa.
Olive Van Stone Jones, *Teacher, Sandusky*	Snover
Louie Joseph, *a*	Grayling
George Armstrong Judson, *Teacher*	Delton
Edward William Kaeding	Detroit
Leo Raymond Kallinger, *Superintendent of Schools, Comstock Park*	Allegan
Samuel Elias Katz, *a, g*	Ann Arbor
John Tracy Kaye, *a*	Marquette
Edwin Emerson Keatley, *a*	Ann Arbor
Edward Homer Keibler, Ph.B., *Grove City College, Teacher, Turtle Creek, Pa.*	Saltsburg, Pa.
Rockwell M. Kempton, *m*	North Adams
James Sheldon Kennedy, *Principal, a*	Saginaw
Frank Earl Kenney, *l*	Miles City. Mont.
Charles Iden Kidd, *m*	Battle Creek
Emmett William Kiebler, *Superintendent of Schools*	Scottville
Mutsu Kikuchi	Fukushimaken, Japan
Margaret Osgood Kilby	Marshall
Egbert Sylvester King	East Lansing
Harry Gilbert King, *a*	Ann Arbor
Ira Franklin King, *Teacher*	Ithaca
John Peter King, B.S., *Valparaiso University, Teacher*	Constantine
Rachel Elmora King, A.B., *Olivet College*	Charlotte
Fred Hamilton Kinney	Ligonier, Ind.
Augustus Kirchner, *a*	Detroit
Mabel Money Kitchen	Ocean Springs, Miss.
Winifred Kittredge, A.B., *University of California, Teacher*	Berkeley, Cal.
Anna Mary Klager, *Teacher*	Ann Arbor
Margaret Elizabeth Benskin Klein, *a*	Canton, Ohio
Harry Albert Kluge	Collinsville, Ill.
Walter Hugo Kluge, *a*	Cape Town, South Africa
James Sybert Klump, *a*	Saginaw
Arthur Warren Knapp	Three Rivers
Rufus Hayward Knight, *a*	Detroit
Adolph Joseph Koenig, *Superintendent of Schools, Kinde*	Saginaw
Ira Edwin Kornfeld	Detroit
John Casimer Kowalski	Detroit
Margaret Anna Kraft, *Teacher*	Saint Louis, Mo.
Clarence Andrew Kretzschmar, *h*	Detroit
Howard Sylvester Kring, *Teacher*	Johnstown, Pa.
Donald Francis Kudner, *a*	Lapeer
Neil Kunselman	Endeavor, Pa.
Edward Frank Kurth	Detroit
Thomas Kees Laird, *Student in Macalester College*	Oakland, Minn.
Lucius Frank Laverty, *a*	Bay City
Donald Emery Lawrence	Hudson
Emerson John Leddick, *Superintendent of Schools, a*	Montague
David Ellwood Lee	Detroit
Charles Everett LeFurge, *Teacher*	Lansing
Albert Thomas Lehman, *a*	De Tour
Florence Rose Lembeck, A.M.	Cleveland, Ohio

Archie George Leonard, *Superintendent of Schools*	Sunfield
Grace Ethel Leonard, *Student in Wellesley College*	Detroit
Philip Francis Leslie, *a*	Toledo, Ohio
Archie R. Levine	Houghton
Paul Leon Lew, *Student in University of Pittsburg*	Shensi, China
Carroll Herbert Lewis, *Student in University of Cincinnati*	Cincinnati, Ohio
David William Lewis, *Teacher, Elk City, Kans.*	Springfield, Mo.
Yeng-Tsung Liang, *Student in Ohio State University*	Kirin City, China
Warren Copeland Lichty, *e*	Ann Arbor
Howard Scott Liddell, *a*	Erie, Pa.
Edith Elizabeth Lidke, *Teacher, Vassar*	Ypsilanti
Dorothea Elizabeth Lindenau, *Teacher*	Indianapolis, Ind.
Feng Chu Liu, *a*	Kirin City, China
Lloyd L. Livermore, *Superintendent of Schools*	Quincy
John White Livingston, A.B., B.S., *Massachusetts Institute of Technology*	Ann Arbor
Karl Nickerson Llewellyn, A.B., *Yale University*	Brooklyn, N. Y.
Raymond Charles Lodholz	Oxford
Florence Marguerite Long, *Teacher*	Dayton, Ohio
Seymour Quinn Long, *a*	Urbana, Ohio
Louise Lovejoy, *Teacher*	Litchfield
Louis Emil Luebbers, *a*	Emden, Ill.
Julio Luzunaris, *a*	San Juan, P. R.
Gladys Lynch, *a*	Van Wert, Ohio
Charles Veron McAlpine, *Teacher, a*	Bassom, N. Y.
Alva John McAndless, *a*	Capac
William Kerr McCandliss, A.B., *Park College, m*	Hoihow, Hainan, China
Grace Dietrich McCarthy	Oklahoma City, Okla.
Charles Henry McCarty, *a*	Lowell
Ethelyn Beryl McClelland, *a*	Ann Arbor
Archibald Irvine McColl, *a*	Grand Rapids
Ethel Agnes McCrickett, *a*	Ypsilanti
Hector Arthur McCrimmon, *l*	Caseville
Elizabeth McDonald, *a*	Alpena
Isabel MacDonald, *Teacher, Highland Park, a*	Detroit
Nellie May McGregor	Detroit
Marguerite McGuinness, *Teacher*	Detroit
Lizzie Parrish McIntire	Washington
Ruby McKenzie	Bay City
Ora May McKim, *Teacher, Flint*	Cass City
Mary Rosamond McKoon, *Student in Wells College*	Detroit
Donald Claude MacLachlan, *a*	Milan
Addeson Theodore McLain	Marinette, Wis.
Florence Edith McLouth, *Teacher, a*	Ann Arbor
Fred Anthony McMahon	Niagara Falls, N. Y.
Alma Laura McMath, *Teacher*	Rochester, N. Y.
Henry D. MacNaughton, *Superintendent of Schools*	Rockford
Gertrude Maginn, *Student in Washington University*	Saint Louis, Mo.
Barnard Fewell Magruder, *a*	Lansing
Laura Grossman Mallory	Toledo, Ohio
Lowell Joseph Mantle, *e*	Kenova, W. Va.
Henrietta Ray Marimon, A.B., *Transylvania College, Teacher*	Nicholasville, Ky.
Frank Martin, Jr., *a*	Boise, Idaho
Edward Maximillion Martinek, *l*	Menominee
Ralph Lawrence Mason, *a*	Cranford, N. J.
Verna Alice Matrau, *Teacher*	Watervliet
John Leland Mechem, A.B.	Battle Creek
Isadore Jack Mehlman, *a*	Toledo, Ohio
Ermelindo Acisch Mercado, *Teacher*	Juana Diaz, P. R.
Esther Mercer, *Teacher*	Saranac
Fanny Harvey Merrill, Ph.B., *Teacher*	Bay City
Glenn William Merritt, *e*	Jackson

Marian Woodbridge Metcalf, *Teacher, Evanston, Ill.*	Grosse Pointe Shores
Mildred Currey Mighell, *a*	Aurora, Ill.
Hazen Lawrence Miller, *a*	Detroit
Harold Americus Mills, *a*	Rochester, N. Y.
Gordon Richmond Mirick, *a*	Rochester, N. Y.
Leonard Alexander Mniece, *Superintendent of Schools*	Lawton
Lydia Wells Mollison, A.B., *Tougaloo University, Teacher, Lawrenceville, Va.*	Vicksburg, Miss.
Ella Catherine Moloney, *Teacher*	Hudson
Emma Devona Montgomery, *Teacher, Grant*	Kalamazoo
Mira Thowaseva Moore, *Teacher, Michigan State Normal College*	Eaton Rapids
Paul McNary Moore, Jr., *a*	Earlington, Ky.
Lillian Helen K. Morris, *Teacher*	Three Oaks
Lauretta Isabelle Morrisey, *Teacher*	Grand Rapids
Alberta Morrison, *Teacher*	Pittsburg, Pa.
Aubrey Carl Morrison	Salem, W. Va.
Mabel Geneva Morse, *Teacher*	Detroit
Minnie Belle Moses, *Teacher, a*	Houghton, N. Y.
Frederick Higgins Moss	Defiance, Ohio
Mark Henry Mothersill, A.B., *Teacher, Calumet*	Fenton
Cyril Harold Motulsky, *a, l*	Dubuque, Iowa
Clinton James Mulholland, *Teacher*	Royal Oak
Laura Mary Murdock, *a*	Ann Arbor
Almira Glen Myer	North Tonawanda, N. Y.
Irene Tanner Myers, Ph.D., *Yale University, Teacher*	Lexington, Ky.
Willis Dean Nance, *a*	Chicago, Ill.
Edna Leonora Nash, *Teacher, Iron Mountain*	Sparta
Marco Vassileff Nasteff, *a*	Sophia, Bulgaria
Julius Nelkin	Ann Arbor
Ill Han New	Detroit
Marie Anna Newberry, *a*	Dundee
Paul Barkley Newcomb, *m*	West Unity, Ohio
Rachel Newcomb	Big Rapids
Claude Reo Nichols, *Superintendent of Schools*	Manton
Hope Hewitt Nichoson, *a*	Luther
Walter Albert Niemann, *a*	Hermansville
David Sharpley Noble, *Student in Washington and Lee University*	Huntington, W. Va.
Maynard Amos Norris, B.S.	Fostoria, Ohio
Emily Frances Northrup, A.B.	Pontiac
Milton H. Northrop, *Teacher, Kendallville, Ind.*	Reading
Mae Josephine Norton, *Teacher, Cadillac*	Ann Arbor
Nellie Lezetta Nusser, *Teacher, Sandwich, Ill.*	Findlay, Ohio
Albert M. Nutten, *Superintendent of Schools*	Plainwell
Katharine Ocobock	South Haven
James Don O'Connor, *l*	Johnstown, Pa.
William O'Connor, Jr., *Superintendent of Schools, Almont*	Allenton
Ira Dawson Odle, B.S., *Purdue University, m*	Oxford, Ind.
Timothy O'Leary	Ann Arbor
Halloween Olney	Ann Arbor
Bertha Lorraine Olsen, A.B., *d*	Ishpeming
Jacob Olthoff, *Teacher, a*	Grand Rapids
Walter Anthony Onorato, *a*	Youngstown, Ohio
Joaquin D. Ortega	Madrid, Spain
Ena Mildred Ostrander, *Student in Albion College*	Hemlock
Menno Otterbein, *Teacher, Mendon, a*	Vestaburg
Tsu Shon Ouyang, *Student in University of Pittsburg*	Kiangsi, China
Harry Victor Owen, *Teacher*	Saint Ignace
Beatrice Pauline Palmer, *Teacher*	Sebewaing
Hayden Palmer, *a*	Detroit
Samuel Floyd Pannabecker, *Student in Bluffton College*	Elkton
Charles Ovide Paradis, *m*	Bessemer

Frances Edna Parker, *Teacher*	Denver, Colo.
Helen Lydia Parker, *a*	Ann Arbor
Janet Parkes, *Teacher*	Mancelona
Delivan F. Parks, *Teacher*	Munith
Dayse May Parsons, *Teacher*	Lowellville, Ohio
Inez Adell Parsons, *Teacher, a*	Dunkirk, N. Y.
Howard Fenno Patterson, *a*	Saginaw
Robert Rowley Patterson, *Student in Yale University*	Ann Arbor
Ernest Frank Montrose Patton, *a*	Slippery Rock, Pa.
John Watson Payne, *Superintendent of School, Cambria*	Reading
Clarence A. Peat, Ph.C.	Detroit
Norma Jessie Pence, *Student in Western College*	Detroit
William Cottrell Pender, LL.B., *University of South Carolina, l*	Norfolk, Va.
Emma Blanche Pepple, *Principal, a*	Traverse City
Marguerite Perry	Milo
Moses Richelieu Franklin Peters, *a*	Ann Arbor
Ward Davis Peterson, *a*	Ann Arbor
Warren Morton Petrie	Ann Arbor
Dueber Hampden Phillips, *m*	Saginaw
Floyd Tifford Phillips, *a*	Green Bay, Wis.
Maurice Clark Piatt, *a*	Lansing
Agnes Olivia Pierron, *Teacher, East Saint Louis, Ill.*	Pierron, Ill.
John Russell Pipp	Ann Arbor
Richard Otto Poch, *a*	Rogers
Gladys Collins Pollock, *a*	Charlotte
Isadore Harris Polozker, *a*	Detroit
Jean Sarah Pond, *Teacher, Bradford Academy*	Bradford, Mass.
Florence B. Potter	Ann Arbor
Leta Alma Potter, *Teacher*	Cresson, Pa.
Clarence Wesley Pratt, B.S., *Valparaiso University, Superintendent of Schools*	Wyoming, Ill.
Henry Field Pratt, *Teacher*	Saint Louis, Mo.
Frank Hugh Purcell, A.B., *University of Detroit*	Detroit
Frank Edward Quinlan, *l*	Ann Arbor
Aleda Violanda Ranft, *Teacher*	Cleveland, Ohio
Paul Tory Rankin, *Principal, Imlay City*	Ypsilanti
Ella Rasmussen, *a*	Detroit
Carlisle Baxter Rathburn, *d*	Ann Arbor
Lila Elizabeth Ray, *Teacher, Sebewaing*	Saint Louis
Ruth Eleanor Rebok, *Teacher, Bellevue, Pa.*	Pittsburg, Pa.
Alice Hetty Record, A.B., *Western College, Teacher*	Pikeville, Ky.
Charles Frederick Reebs, *Superintendent of Schools, a*	Plymouth
Edna May Reed, *a*	Flint
Ernest Reed, *a*	Lansing
Ernest Arden Reese	Ebensburg, Pa.
Robert Lathrope Reeves, *Teacher, Palo*	Belding
Agnes Cecilia Regan, *a*	Ann Arbor
Marie Evelyn Rehmert	Dayton, Ohio
Thomas Corcoran Reid	Detroit
Julia Renwick, *a*	Grand Rapids
Harvey Lewis Rettick	Ann Arbor
Margaret Ruth Reynolds, *a, g*	Ann Arbor
Paul Howard Reynolds	Dundee
Lee King Richardson, *a*	Alpena
Joseph Schober Richtig, *g*	Iron Mountain
Albert A. Riddering, *Superintendent of Schools*	Dundee
Clarence Julian Riley, *a*	Townsend, Mont.
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Karl John Sherman	Lansing
Philip Edward Siggers	Ann Arbor
Howard Woodworth Simpson, *e*	Detroit
Clarence Oramel Skinner, *e*	Lansing
Donald Abram Smith, *e*	Algonac
Edison Chester Smith, *e*	Niagara Falls, N. Y.
Ralph Elgar Laurie Smith	Rockville, Md.
Harry George Sparks, *e*	Jackson
Tracy Waters Southworth, *a*	Monroe
Franklin Cox Stanton, *e*	Detroit
Nelson Cornelius Steketee, *e*	Holland
Bernhard August Stenberg, *e*	Chicago, Ill.
Walter Adam Sterling	Neguanee
Bedell Porter Stewart, *e*	Dearborn
Frederick Gustavus Strauss, *e*	Saint Clair
Clarendon Earl Streeter, *e, g*	Bolivar, N. Y.
Edward Grant Stuart, *e*	Akron, Ohio
William George Stuefer, *e*	West Point, Nebr.
Forest Helmer Sweet	Battle Creek
Harold Earnest Taft, *e*	Ann Arbor
Harold Anderson Taylor, *e*	Rochester
Paul Bowdish Taylor, *e*	Schenectady, N. Y.
Frederick John Thieme, Jr., *e*	Fort Wayne, Ind.
Frank Barton Thompson, *e*	Anchorage, Ky.
Fred Martin Thrun	Ann Arbor
Frank Lindley Tobey, *a*	North Newport, N. H.
Karl George Totzke	Benton Harbor
Howard Orville Trerice, *e*	Detroit
Charles Brown Tuley	Louisville, Ky.
Urban Victor Turner, *e*	Wilmerding, Pa.
Willis H. Tuttle, *e*	Ann Arbor
Gilbert Stanley Underwood, *e*	Detroit
Louis Francis Voorhees, *g*	Toledo, Ohio
Milton Fred Wagnitz, *e*	Detroit
Karl Ford Walker, *e*	Washington, D. C.
William Almon Ward	Warren, Ohio
Max Eugene Webster, *e*	Peoria, Ill.
Henry Weinstein, *e*	Goshen, Ind.
Carlton Edwin Wells, *e*	Ann Arbor
Adolph Frederick Wendler	Mount Clemens
Earl William Werner, *e*	Grand Rapids
George Alphonsus Weschler	Washington, D. C.
Roland Severyne Westbrook	Ann Arbor
William Frederic Wetmore, *e*	Jonesville
James Lawrence Whalen, *e*	Savannah, N. Y.
Laurence Edwin Whitaker, *e*	Detroit
Harry Hudson Whittingham, *e*	Detroit
Lewis Clark Wilcoxen	Holyoke, Mass.
Hans Peter Williamson	Ludington
Herbert John Williamson	Newport News, Va.
Franklin Robert Winch, *e*	Dayton, Ohio

Kei Tit Wong, *e*	Canton, China
David Pangmon Wood, *e*	Chicago, Ill.
Joseph Edward Woodman, *a*	Bennington, Vt.
Henry Charles Worfel, *e*	Grand Rapids
Clarence Wilmer Wright	Ann Arbor
Ferris Giles Wright, *e*	Coldwater
Da Chang Wu	Hangchow, China
Bertha Louise Yerex, *e*	Ann Arbor
Wing Tong Young, *e*	Canton, China
Lan Yu	Kiang-si, China
Carlos Alberto Zanelli, *e*	Valparaiso, Chile

MEDICAL SCHOOL

Alfred Joseph Abbott, M.D., *Rush Medical School, Physician*	Albion
Theodore Wright Adams, *a*	Ann Arbor
Jose Alum, A.B., *m*	Arecibo, P. R.
Einer Bjarne Andersen, *a*	Ann Arbor
Laverne Hayes Andrews, *d*	Ann Arbor
Wayne Jason Atwell, A.B., *Nebraska Wesleyan University,* A.M., *g*	Ann Arbor
Elsie Lois Backus (Novy), *a*	Ann Arbor
Donald Kay Bacon, *m*	Saint Paul, Minn.
Reame Leslie Bailey, *d*	Pontiac
Arlie Ray Barnes, A.B., *University of Indiana,* A.M., *ibid., Student in University of Indiana Medical School*	Hayden, Ind.
Frank Joseph Bauman, *d*	Mount Clemens
John Wallace Beardsley, M.D., *Northwestern University, Physician*	Macon
Bertha Alma Bennett, *Teacher*	Indianapolis, Ind.
Victor William Bergstrom, *h*	Bay City
Bert Ira Beverly, *a*	Ann Arbor
Robert Vincent Bird, *d*	Cape Town, South Africa
David Joseph Bittker, *d*	Detroit
Galo Wencesiao Blanco, B.S., *g*	San Juan, P. R.
Charles Ancil Bosworth, *m*	Paola, Kans.
Dudley Pleasants Bowe, A.B., *Richmond College, Student in Johns Hopkins Medical School*	Richmond, Va.
Milo James Brady, *Student in Tulane University Medical School*	New Orleans, La.
Stuart Broadwell, Jr., *Student in University of Pennsylvania*	Philadelphia, Pa.
Michael Frederick Brondstetter, M.D., *Physician*	Mount Pleasant
Robert Ellsworth Brown, A.B., *University of Illinois,* M.S., *g*	Danville, Ill.
Ernest Herman Brunquist, A.B., *Bates College*	Hood River, Ore.
John Fairman Bulmer, *d*	Youngstown, Ohio
Eugene Loving Bulson	Fort Wayne, Ind.
Max Ronald Burnell, *m*	Flint
Alfred Joseph Burr, *m*	Manistique
Richard Edward Cahalan, A.B., *University of Detroit, Student in McGill University*	Wyandotte
Dorothy Walcott Caldwell, B.S., *Rhode Island State College,* M.S., *ibid., Assistant, Experiment Station, Kingston, R. I.*	Kingston, R. I.
Henrietta Anne Calhoun, B.S., *University of Illinois,* A.M., *ibid., m*	Ann Arbor
William Frazier Chadwick, *d*	Muir
Leonard William Hooson Charnock	Manchester, England
Harry Leroy Clark, A.B., *g*	Ann Arbor
John Howard Cobane, *a*	Detroit
Melissa Hazel Cobb, B.S.	Ann Arbor
Theodore Hill Conklin, A.B., *m*	Kingston, N. Y.
John Timon Connell	Ann Arbor

Edward John Coram, B.S., *University of Idaho, m*	Grangeville, Idaho
George Albert Cronk, *d*	Montour Falls, N. Y.
Joseph Rogers Darnall, *m*	Washington, D. C.
James Ethelbert Davis, M.D., *Detroit College of Medicine*, A.M., *Physician, g*	Detroit
Abel de Juan, *a*	San Juan, P. R.
Seth Ellis DeMuth, M.D., *Eclec Medical Institute, Physician*	Cecil, Ohio
Ralph Arthur Denison, *d*	Durand
Casimir Anthony Domzalski, A.B., *University of Detroit, m*	Detroit
Albertus Wynand Eksteen, *d*	Piquetberg, South Africa
William T. Elliott, *Student in Northwestern University*	Chicago, Ill.
Theodore VanReenen Engels, *d*	Paarl, South Africa
Hazel Hildegarde Eppler	Detroit
Benjamin Joseph Eslick, *d*	Iron Mountain
Bernard Fantus, M.D., *University of Illinois, Physician and Teacher, University of Illinois*	Chicago, Ill.
Florence Fenwick, *a*	Ann Arbor
Thomas Samuel Finney, A.B., *Wabash College, Student in Johns Hopkins Medical School*	Attica, Ind.
Walter Abram Fort, B.S., *m*	Centerville
George Albert Frederick, *d*	Owosso
Cassius Ward Friberg, *Student in Vanderbilt University*	Nashville, Tenn.
Helen L. B. Gage, *m*	Wixom
Myron Elnathan Garner, *a*	Fredonia, Pa.
Earl August Gelhaar, *d*	Detroit
William McKee German, A.B.	Pittsburg, Pa.
William Bell Goddard, M.D., *Vanderbilt University, Instructor in Pathology, Vanderbilt University*	Nashville, Tenn.
John Orton Goodsell, Jr., *d*	Saginaw
Richard Emanuel Gordon	Ann Arbor
Glenn Arthur Graham, *d*	Lapeer
William Henley Graham, *d*	Detroit
Charles W. Greene, A.B., *Stanford University*, A.M., *ibid*, Ph.D., *Johns Hopkins University, Professor of Physiology and Pharmacology, University of Missouri*	Columbia, Mo.
Ray Ellsworth Greenwood	Kankakee, Ill.
Boyd Loreno Greever, *Student in University of Missouri*	Huntington, W. Va.
Jose Mautalvan Guerrero, B.S., *Institute National de Occident de Leon, m*	Leon, Nicaragua
Gerald Graham Hall, *d*	Detroit
Signe Maria Hamalainen, *d*	Ann Arbor
Campbell Harvey, A.B., *m*	Detroit
Clyde Knapp Hasley, A.B., *m*	Monroe
John Hayward, *d*	Johannesburg, South Africa
George Rudolph Herrmann, B.S., *m*	Fort Wayne, Ind.
Richard Uno Hirwas, *d*	Gwinn
Lynne Arthur Hoag, B.S., *m, g*	Ann Arbor
Arthur A. Hobbs, Jr., *Student in University of Missouri*	Kansas City, Mo.
Champ Holt Holmes, B.S., *University of Georgia, Student in Johns Hopkins Medical School*	Macon, Ga.
Alan Dean Honey, *d*	Saint Joseph
Edgar Allan Honey, *d*	Kalamazoo
Merle Russell Hoon, A.B., *Westminster College*	Mercer, Pa.
John Gardiner Huck, A.B., *Johns Hopkins University, Student in Johns Hopkins Medical School*	Baltimore, Md.
Ernest Victor Hughes, *d*	Massillon, Ohio
Cyril Christopher Hussey, B.S., *Ohio University, Student in Johns Hopkins Medical School*	Sidney, Ohio
Carroll C. Hyde, B.S., *Alma College, m*	Addison
Charles Raymond Illick, A.B., *Taylor University, m*	Hulmeville, Pa.
Bertram Victor Ingle, *d*	Cape Town, South Africa
Louis Manning James, Jr., *d*	Ypsilanti
Leo George Jentgen, *m*	Detroit

George Sutton Johnston, A.B.	Grand Rapids
Wayne Alvin Johnston, *a*	Champaign, Ill.
Edward Burtson Kellogg, M.D., *Physician*	Belleville
Edward Newcomb Kellogg, *d*	Wolcott, N. Y.
Lee Earl Kelsey, M.D., *Physician*	Lakeview
Rockwell M. Kempton, *m*	North Adams
Eugene Ghert Klaver, *d*	Grand Haven
James Sybert Klump, *a*	Saginaw
Nathaniel Hawthorne Lang, *Student in University of Georgia Medical School*	Waverly, Ga.
Tan Piew Lee, A.B., *Taylor University, m*	Singapore, China
Fred Oliver Lepley, A.B., *Oberlin College, Student in Western Reserve Medical School*	Monroeville, Ohio
Verne Emory LeRoy, A.B., *Ohio State University,* M.S., *ibid, Teacher, Michigan Agricultural College*	East Lansing
Joseph Stanley Leszynski, *m*	Detroit
Elmore F. Lewis, *m*	Vandalia
Treverton Evans Lewis, *d*	Plymouth, Pa.
Tsoong Shing Lieu, B.S.	Foo Chow, China
L. Mason Lyons, *m*	Kansas City, Mo.
Albert MacDonald, *d*	Marshall
Charles Bell McGlumphy, Ph.C., M.D., *Ohio State University, Teacher*	Galveston, Texas
Charles Maggio, *h*	Rochester, N. Y.
Hendrik Jacobus Marais, *d*	Robertson, South Africa
Karol Jan Marcinkiewicz, *d*	Detroit
Thomas Meriwether Marks, *m*	Lexington, Ky.
William Jennings Bryan Mason, *d*	Saginaw
Elmer Stephens Maxwell, M.D., *Vanderbilt University, Instructor, Vanderbilt Medical College*	Nashville, Tenn.
Edward McNee Mead, *h*	Ann Arbor
Abie Robert Melcher, *d*	Kimberly, South Africa
Walter Julius Meullenhagen, *Student in Detroit College of Medicine*	Detroit
Harold Fildew Millman, *p*	Saint Johns
Donald Lyle Mitchell, *d*	Leslie
Luis Raymond Moczo	San Juan, P. R.
Frank Macquarie Moxon, A.B., *Maryville College, Student in Georgetown University*	Memphis, Tenn.
John Henry Muyskens, A.B., *Instructor, Calvin College*	Grand Rapids
Mosco Fernando Nunez, A.B., *University of Texas, Student in University of Georgia*	Swainsboro, Ga.
Augustus Joseph O'Brien, Ph.C., B.S., M.D., *Physician*	Ironwood
John Brennan O'Donoughue	Chicago, Ill.
Samuel Osborn, B.S., M.D., *Physician*	Lansing
Algernon Arthur Palmer, *m*	Chelsea
John Purl Parsons, B.S., *Teacher University of Manitoba*	Boise, Idaho
Dueber Hampden Phillips, *m*	Saginaw
Charles Burdette Pillsbury, *h*	Duluth, Minn.
Sherwood Mortley Pinkerton, Jr., B.Ch.E., *g*	Toledo, Ohio
Cyrus Watt Poley, A.B., *University of Colorado,* M.D., *ibid, Physician*	Boulder, Colo.
Harry Harlow Pool, A.B., *Ohio Wesleyan University, Student in Western Reserve Medical School*	Urbana, Ohio
Horace Wray Porter, E.E., *Lehigh University, m*	New York, N. Y.
Benjamin Giles Pyle	Kalamazoo
Carl Frost Raver, B.S., M.D., *Bacteriologist, University of North Dakota*	Grand Forks, N. Dak.
Stanley Barnes Robertson, A.B., *Hillsdale College*	Ann Arbor
Tom Howard Robertson, *m*	Ann Arbor
James Bailey Rogers, Ph.C., *Vanderbilt University,* M.D., *ibid,*	Independence, Iowa
Viola Pevey Russell, A.B., *Vassar College, m*	Wellesley, Mass.

Roman Jan Sadowski, M.S., *University of Detroit, Physician*	Detroit
Raymond Dominic Schirack, A.B., *Ohio State University, m*	Saint Henry, Ohio
Albert Joachim Schmoler, M.D., *Michigan College of Medicine and Surgery*	Detroit
Fred John Schuster, *m*	Cleveland, Ohio
William Ira Searles, A.B., *m*	Canandaigua, N. Y.
Murray Maywood Sears, B.S., M.D., *Physician*	Kalamazoo
Charles Wesley Sellers, *Student in Detroit College of Medicine*	Detroit
Thomas Fort Sellers, A.B., *Mercer University, City Bacteriologist, g*	Macon, Ga.
John Albert Sheldon, *m*	Plainwell
Bert H. Shepard, *m*	Lake Odessa
Porter Albert Sherman, A.B., *Hiram College, a*	South Haven
Sidney Jerome Shipman, *a*	Ann Arbor
Emory Walter Sink, A.B., M.S., *m*	Ann Arbor
Edwin Rogers Smith, A.B., *Indiana University, m*	Richmond, Ind.
Solomon Arthur Sobul, B.S., *University of Chicago, Student in Western Reserve Medical School*	Cleveland, Ohio
James Benjamin Somers, *d*	Rodney, Ont.
John Henry Staacke, *h*	Duluth, Minn.
James Mark Stanton, *m*	Richmond, Ind.
Henry Starikoff, *d*	Detroit
Edward Stebbins, B.S., *Hobart College, h*	Brooklyn, N. Y.
Jane Darling Stevenson, *m*	Akron, Ohio
Donald Wickham Stewart, M.D., *Southern Medical College*	Beaver, Pa.
Washington Parker Stowe, B.S., *Ohio Northern University, m*	North East, Pa.
Hugh John Strathearn, *Student in Adrian College, h*	Jackson
Oliver M. Strong, *d*	Mitchell, S. Dak.
John Wright Sweet, *d*	North Baltimore, Ohio
Chow Foung Tang, *m*	Hangchow, China
James Edward Taylor, M.D., *Western Reserve University*	Ovid
Earl Henry Teetzel, *d*	Detroit
Frederick Homer Tinsman, A.B., *d*	Ann Arbor
Eugene Frederick Traub, *m*	Dubuque, Iowa
William H. Tucker, M.D., *Ohio State University*	Eldorado, Ohio
Ruth Cecilia Wanstrom, A.B., *m*	Rockford, Ill.
Theodore Leo Warden	Thomaston
Roy Seymour Watson, M.D., *Rush Medical School*	Saginaw
Robert William Watson, *m*	Ludington
George Watt, M.D., *Harvard University*	Laconia, N. H.
Perry Van Whitaker. *d*	Flint
William Isaac Whitaker, *d*	Flint
Albert DeForest Wickett, B.S., *m*	Mount Pleasant
Arthur Guy Williams, A.B.	Waupaca, Wis.
Max Milton Williams, *d*	Owosso
Harold Edward Wisner, *h*	Ann Arbor
Henry John Woessner, Jr., *m*	Ann Arbor
Walter John Wright, M.D., *Physician*	Ypsilanti
Jerome Zeigler, *m*	Maysville, Ky.

LAW SCHOOL

William Charles Achi, Jr., A.B., *l*	Honolulu, Hawaii
Arthur J. Adams, *l*	Lockwood, N. Y.
John Quincy Adams, A.B., *l*	Columbia City, Ind.
Rollin Christopher Alderson	Austin, Minn.
Robert Moffat Allan, *l*	Detroit

Floyd Elmer Armstrong, A.B., A.M.	Ann Arbor
Hu G. Arnold, A.B., *Union University*	Jackson, Tenn.
William Earl Bachop, *l*	Sheakleyville, Pa.
Barker Douros Bairam, A.B., *Ohio State University, l*	Paphos, Cyprus
Simon Peyton Baker, *a, g*	Plainville, Ill.
Arthur John Bancroft	Detroit
Olive Neville Barton, Ph.B., *University of Chicago*	White Cloud
John Tucker Batten, A.B., *University of Arkansas*	Paragould, Ark.
Albert Rodney Baxter, *l*	Brodhead, Wis.
Clay Williams Beckner	Bryceland, La.
Marion Roy Beeman	Robinson, Ill.
Jay Thompson Bell, A.B., *Pennsylvania State College, l*	Ann Arbor
LeRoy H. Bibby, *l*	Reed City
Carl Binns, *l*	Addison
Duane Bird, A.B.	Nogales, Ariz.
Elmore John Blackert, *l*	Jackson, Tenn.
Virgil Lourie Blanding	Moline, Ill.
Arthur Bohn, *l*	Lockport, Ill.
Lucius Comstock Boltwood, A.B., *Yale University, l*	Grand Rapids
Merchant Bliss Bowman, *l*	Martin, Ohio
Isaac Franklin Bradley, Jr.	Kansas City, Kans.
Frank J. Brewbaker, B.S., *Central Normal College,* LL.B., *ibid*	Altamont, Ill.
Charles Harold Breyman, *l*	Toledo, Ohio
Cecil Auger Brown, *l*	Chicago, Ill.
William Franklin Brown, A.B., *Mercer University, l*	White City, Fla.
DeVere Francis Bustin	Coldwater, Ohio
Guy Jeremiah Carpenter, A.B., *l*	Ann Arbor
Earl Melay Cline	Nebraska City, Nebr.
William Ballinger Cobb, A.B., *University of Wyoming*	Casper, Wyo.
Maurice Farrand Cole, A.B., *Alma College*	Paw Paw
Sam C. Cook, Jr., B.S., *University of Mississippi,* LL.B., *ibid*	Jackson, Miss.
Harold Benn Corwin	Grand Rapids
David Cotten	Hickory, Okla.
Norman Frame Crawford	Detroit
Wendell Francis Crockett, A.B., *l*	Wailuku, Mani, Hawaii
Louis Ferdinand Dahling, *l*	Bozeman, Mont.
Orlo R. Deahl	Goshen, Ind.
Joseph Arlington Dickey	Alexandria, Ind.
Garrett Seymour Dill	Waverly, Ohio
John Arthur Dougherty, *l*	Kankakee, Ill.
Waldo John Duddleson, *l*	East Ely, Nev.
Roland Glen Dunn, *l*	Ann Arbor
Robert Hiram Dunn, A.B., *University of Wisconsin,* A.M., *ibid, l*	Ann Arbor
Lloyd Byron Eherenmann, A.B., *Valparaiso University*	Tippecanoe, Ind.
Douglas Stilwill Elliott, *l*	Sioux Falls, S. Dak.
Alvin Eleazar Evans, A.B., *Cotner University,* A.M., *University of Nebraska,* Ph.D., LL.B., *University of Idaho*	Pullman, Wash.
Harry Houts Evans	Kansas City, Mo.
Fred Sylvester Flick, A.B., *l*	Hazelton, Pa.
Raymond Archibald Fox, *l*	Wichita, Kans.
Charles Inge Francis, A.B., *University of Texas*	Austin, Texas
Samuel Daniel Frankel, B.S. in C.E., *Georgia School of Technology, l*	Atlanta, Ga.
James Frost	Escanaba
Herbert Card Garrison, *a*	Ann Arbor
Samuel Gordon Geiger	Chicago, Ill.
Thomas Livingston Gibson, A.B., *University of Tennessee*	Muskogee, Okla.
Melvin Ralph Gombrig, *a*	Chicago, Ill.
Robert Milton Goodrich, *l*	Port Huron
Benjamin Berul Gordon, *l*	Detroit
Carl Martin Greiffendorf	Benton Harbor

Henry George Gress, A.B., *Juniata College, l*	Meyersdale, Pa.
R. Kline Grieb	Glenside, Pa.
Durward Grinstead, A.B.	Louisville, Ky.
Leolin Harrison Gross	Austin, Texas
Frank Marion Gunter, *l*	Indianapolis, Ind.
Melvin J. Haire	Grand Rapids
Joseph Farland Hall, A.B., *William and Mary College*	Williamsburg, Va.
William Joseph Harris	Evanston, Ill.
Walter William Harris, A.B., *Bucknell University, l*	Lewisburg, Pa.
William Baxter Harrison, A.B., *Transylvania University*	Brooksville, Ky
Merwin Haven, *l*	Ottumwa, Iowa
Abner Lowrie Heisler, *l*	Ravenna, Ohio
Paul Morgan Herbert, A.B.,*Ohio State University*	McComb, Ohio
Ralph Wesley Hicks, A.B., *a*	Grand Rapids
Eerde Willem Hoogsteen, A.B.	Grand Rapids
Cylvester Charles Horn	Saint Louis, Mo.
Jerome Felsenthal Horwitz	Newport News, Va.
Henry Kirkwood Huber, *l*	Tipton, Iowa
Neal Dow Ireland, *l*	Florence, Kans.
Harold Jennings Janson, A.B., *Ohio State University*	Cleveland, Okla.
Beauford Halbert Jester, A.B., *University of Texas*	Corsicora, Texas
Adna Romulus Johnson, Jr.	Ironton, Ohio
Charles Baxter Jones, A.B., *Mercer University,* LL.B., *ibid*	Macon, Ga.
Zack Justice	Catlettsburg, Ky.
Russell P. Kehoe, A.B., *Hanover College, l*	Jeffersonville, Ind.
George John Keinath	Ottawa, Ohio
L. Hugo Keller	Appleton, Wis.
Frank Earl Kenney, *l*	Miles City, Mont.
Russell Newell Keppel	Buffalo, N. Y.
William Gordon Kline, A.B.,*University of Illinois*	University Place, Nebr.
Walter William Kohler, A.B., *Wesleyan University, l*	Rendham, Pa.
Walter J. Koppen, B.S., *Washington State College*	Pullman, Wash.
Clarence Roderick Kramer	Clearfield, Pa.
Daniel Sylvan Kramer	Clearfield, Pa.
Paul Alexander Krueger, *l*	Michigan City, Ind.
George Vance Labadie	Caney, Kans.
Herbert Will Lamb, E.M., *Lehigh University, l*	Adrian
Robert Porter Lane, A.B., A.M., *l*	Ann Arbor
Myer Barnett Lavine, *l*	Cleveland, Ohio
Arthur Hurd Lee, *l*	Manchester, Ala.
Samuel Harding Lefton	Pittsburg, Pa.
Morris Levinkind, *l*	Chicago, Ill.
John Francis Linehan	North Troy, N. Y.
John Alexander Livingston	Buffalo, N. Y.
Karl Nickerson Llewellyn, A.B., *Yale University*	Brooklyn, N. Y.
Clarence Lohman, A.B., *University of Texas,* A.M., *ibid*	Port Arthur, Texas
Hsiao-min Soule Louis, A.B.,*George Washington University,* A.M., *University of Pennsylvania*	Peking, China
Robert Worthington Lyman, B.S., *Massachusetts Agricultural College,* LL.B., *Boston University,* LL.M., *ibid,* D.C.L., *Yale University*	Northampton, Pa.
Harrison Logan McCarthy, A.B., *Mt. Union College, l*	Leetonia, Ohio
Hector Arthur McCrimmon, *l*	Caseville
John Dewitt McIntyre, A.B., *Grove City College*	Etna, Pa.
Ralph Porter Mackenzie, A.B., *Yale University,* LL.B.	Lima, Ohio
W. C. Gordon McLeod, *l*	Woodstock, Ont.
Charles W. Mehaffy	Little Rock, Ark.
Earl Luther Meyer	Geneva, Nebr.
Marcus Randall Morton, *l*	Plummer, Idaho
Benjamin Snively Motter, *l*	Lima, Ohio
Richard Strobach Munter	Spokane, Wash.

Willis Dean Nance, *a*	Chicago, Ill.
Delos J. Needham, A.B., *University of Washington,* LL.B., *ibid*	Lewiston, Idaho
Charles Thomas Newton	Ypsilanti
Thomas Clarence Nicholls, Jr., A.B., *Loyola University,* LL.B., *Tulane University*	New Orleans, La.
Donald Wann Ogilbee	Manitou, Colo.
Thomas L. O'Hearn, A.B., *University of Minnesota*	Minneapolis, Minn.
Alejandro José Panlilio, *l*	Pampagna, P. I.
Themistocles Phiambolis	Saint Louis, Mo.
Feliz Hamilton Phillips	Jackson, Tenn.
Samuel Goodwin Pickus, *l*	Sioux City, Iowa
Willis Thompson Pierson	Milwaukee, Wis.
Maxwell Irving Pitkin	Ravenna, Ohio
John James Poleski, *l*	Detroit
Hermon Pomper	Wilmette, Ill.
Harry Dale Reber, *l*	Fremont
William Joseph Regan	Buffalo, N. Y.
Clarence Augustus Reid, *l*	Circleville, Ohio
Louis Joseph Reisch, *l*	Springfield, Ill.
Deane Matthews Richmond, M.E. (E.E.), *Ohio State University*	London, Ohio
Benjamin Francis Rosenthal, A.B.	Ann Arbor
Henrietta Elizabeth Rosenthal, A.B., A.M., *l*	Ann Arbor
Herbert Blaine Rudolph, A.B., *University of South Dakota, l*	Canton, S. Dak.
Hermon Sackett, A.B., *Washington and Jefferson College,* A.M., *ibid*	Edinboro, Pa.
Oscar Carl Sattinger, *l*	Indianapolis, Ind.
Dwite Hayden Schaffner, Ph.B., *Bucknell University,* A.M., *ibid, l*	Falls Creek, Pa.
Harry Simeon Scheinman, *l*	Detroit
Frederick William Schwarz	Saint Louis, Mo.
Malcolm McCormick Scott	Pittsburg, Pa.
William Augustus Semmes, Jr.	Savannah, Ga.
Dan Norman Simons, *l*	Houghton
Frederick Vernon Slocum, A.B., *l*	Ann Arbor
Harold Huisdell Smedley	Grand Rapids
Henry W. Smith, *l*	Tyro, Ark.
Edward Otis Snethen, A.B., *Marion College, l*	Walkerton, Ind.
Oscar A. Stafford, *l*	Chariton, Iowa
James Geddes Staley, A.B., *l*	Battle Creek
W. R. Barksdale Stevens, B.S., *University of Mississippi, l*	Hattiesburg, Miss.
Alexander Jerry Stoddard	Auburn, Nebr.
Clarence J. Stokes	Pensacola, Fla.
Jay Stough, *a*	Morris, Ill.
Everett Alonzo Swartz	Germantown, Ohio
George Richard Tandler, A.B.	Ann Arbor
Clarence James Tannehill, A.B., *Antioch College, l*	Pittsburgh, Pa.
Isaac Lash Thomas	Constantine
Roger Withington Thompson	Jackson
Guillermo Zosimo Villanueva, A.B., *Silliman Institute, l*	Bais, P. I.
Abe D. Waldauer, LL.B., *University of Memphpis*	Vicksburg, Miss.
Robert William Ward, *a*	Ypsilanti
Marvin Pierce Watkins	Harrisburg, Ark.
Henry Herman Weideman, *a, l*	Detroit
Roman Casimir Widmann, *l*	Johnstown, Pa.
Clay Webster Wilber, A.B.	Clio
Ross Frederick Wilkins, *l*	Paw Paw
Edgar Morgan Williams, *l*	Akron, Ohio
Frank Eugene Williams, *l*	Saint Louis, Mo.
Percy Cameron Wilson	Clare

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Mabel Money Kitchen	Ocean Springs, Miss.
Anna Mary Klager, *Teacher*	Ann Arbor
Florence Rose Lembeck, A.M.	Cleveland, Ohio
Esther Mercer, *Teacher*	Saranac
Emily Frances Northrup, A.B.	Pontiac
Halloween Olney	Ann Arbor
Samuel Floyd Pannabecker, *Assistant Librarian and Student in Bluffton College*	Elkton
Alice Hetty Record, A.B., *Western College, Teacher*	Pikeville, Ky.
Caroline Blain Sanders, *Assistant Librarian, Vanderbilt University*	Nashville, Tenn.
Donna Ettie Sullivan, A.B.	Jackson
Golda Marie Thompson, *Assistant Librarian, Butman-Fish Library, Saginaw*	Saginaw
Dorothy Lu Towle, *Assistant, Hall-Fowler Memorial Library, Ionia*	Stanton
Blanche Washburne, A.B.	Ann Arbor
Amy Whittemore Watts	Bristol, R. I.

BIOLOGICAL STATION

Anna Criswell Arbuthnot, B.S., *Geneva College*, A.M., *Western Reserve University, Teacher*	Cleveland, Ohio
Donald Leslie Augustine, *Student in Macalester College*	Kasson, Minn.
Frank Nelson Blanchard, A.B., *Tufts College, g*	Tufts College, Mass.
Sarah Mildred Boland, A.B., *Western College, Teacher*	Paris, Ill.
Mary Snow Case	Ann Arbor
Mabel Elizabeth Chapman, A.B., *Western Reserve University, Teacher, Cleveland, Ohio*	New Milford, Ohio
Helen Mason Clapp	Grand Rapids
Allen Clifton Conger, A.B., *Ohio State University*, M.S., *ibid, Teacher, Michigan Agricultural College*	East Lansing
Frank Boyd Cotner, A.B., *g*	Strawberry Ridge, Pa.
Robert James Dobson, A.B., *Albion College*, A.M., *Professor of Zoology, Peking University, Peking, China*	Parma
Hilda Farrar, A.B., *Rochester University, Teacher*	Rochester, N. Y.
Benjamin Henry Griesemer, B.S., *Northwestern College, Principal of High School, Sisseton, S. Dak.*	Bremen, Ind.
Frances Marie Guilford, *a*	Friendship, N. Y.
Ruby Mariett Hall, A.B.	Dexter
Howard Rice Hill, A.B., *Carroll College*, M.S., *University of Illinois, Student in University of Illinois*	Chicago, Ill.
Charles Bruce Hitch, *Teacher*	Bloomington, Ill.
Ethelwynn Annette Hopkins, *Student in Macalester College*	Mankato, Minn.
Roland Fountain Hussey, *a*	Ann Arbor
Thomas Kees Laird, *Student in Macalester College*	Oakland, Minn.
Lindley Ward McReynolds, A.B., *Defiance College*	Sharpsville, Ind.
Sophia Marie Moiles, A.B., *Teacher, Saint Clair*	Saginaw
Margaret Scott Pengelly, A.B., *Kalamazoo College, g*	Kalamazoo
Katherine Cecilia Post, A.B., A.M., *Teacher*	Holland
Margaret Ruth Reynolds, *a*	Ann Arbor
Glenwood Coblentz Roe, *Student in University of Colorado*	Nevada, Mo.
Lida Rogers, *Teacher, Holland*	Montague

Summary of Students[*]

COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS

Undergraduates	3254	
Students enrolled in classes meeting in neighboring cities	366	3620

COLLEGES OF ENGINEERING AND ARCHITECTURE

College of Engineering	1395	
College of Architecture	157	1552

MEDICAL SCHOOL

Resident Practitioners	6	
Fourth Year Students	62	
Third Year Students	70	
Second Year Students	73	
First Year Students	117	328

LAW SCHOOL

Third Year Students	148	
Second Year Students	91	
First Year Students	148	
Special Students	12	
Students primarily enrolled in other Colleges	4	403

COLLEGE OF PHARMACY

Undergraduates	112	112

HOMOEOPATHIC MEDICAL SCHOOL

Resident Practitioners	8	
Fourth Year Students	14	
Third Year Students	13	
Second Year Students	11	
First Year Students	10	56

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[*] Throughout the summaries, in totalling, deductions have been made for names appearing twice in the items added.

COLLEGE OF DENTAL SURGERY

Third Year Students	112	
Second Year Students	107	
First Year Students	107	
First Year Students, Four-Year Curriculum	35	
Special Student	1—	362

GRADUATE SCHOOL

Students	369—	369
Net Total, exclusive of Summer Session		6601

SUMMER SESSION OF 1916

College of Literature, Science, and the Arts	813	
Colleges of Engineering and Architecture	358	
Medical School	189	
Law School	182	
College of Pharmacy	27	
Graduate School	263—	1794
Grand Total (net)		7517

TOTAL, INCLUDING THE SUMMER SESSION, AFTER DEDUCTING FOR NAMES COUNTED TWICE

College of Literature, Science, and the Arts	4141
Colleges of Engineering and Architecture	1654
Medical School	468
Law School	505
College of Pharmacy	123
Homœopathic Medical School	56
College of Dental Surgery	362
Graduate School	571

SUMMARY BY STATES AND BY SCHOOLS AND COLLEGES

	Lit., Sci. and Arts.	Eng. and Arch.	Medicine.	Law.	Pharmacy.	Homoeopathic	Dental.	Graduate.	Summer Session.	Total.
Michigan	2344	868	158	163	72	28	219	198	978	4412
Ohio	273	157	29	33	7	4	23	25	129	609
New York	148	112	27	6	13	6	32	24	92	394
Illinois	178	51	11	35	6	2	2	12	73	322
Pennsylvania	112	67	18	23	1	—	11	14	90	294
Indiana	127	30	14	17	1	2	6	13	47	230
Missouri	30	13	3	5	—	—	2	2	22	71
Iowa	25	10	3	19	—	2	—	4	15	64
Kansas	22	5	3	15	—	—	3	4	18	59
New Jersey	32	21	2	—	—	—	3	2	5	59
Wisconsin	22	6	—	5	—	—	3	4	13	48
Massachusetts	14	18	1	—	1	—	—	10	6	46
Minnesota	18	8	4	4	—	2	1	2	14	46
Kentucky	17	5	2	2	1	1	—	2	19	41
Oklahoma	18	8	1	4	—	1	—	—	12	37
Washington	13	8	7	6	—	1	—	1	6	37
California	12	7	2	5	—	3	—	3	7	36
District of Columbia	15	15	2	1	—	—	—	4	10	35
South Dakota	13	5	3	8	—	—	1	1	7	31
West Virginia	10	4	—	1	—	1	4	1	13	31
Colorado	15	5	—	1	2	—	1	2	8	30
Connecticut	16	8	1	1	—	—	—	1	5	28
Porto Rico	6	5	6	—	—	—	5	3	13	28
Montana	10	4	1	5	—	—	3	—	8	27
Nebraska	14	1	1	1	2	—	—	—	10	27
Tennessee	5	3	1	4	—	—	—	4	11	24
Texas	10	5	1	—	—	—	—	2	9	24
Idaho	5	1	2	4	—	—	3	1	5	18
Maryland	6	3	—	—	—	1	—	2	7	18
Arkansas	4	2	—	6	—	—	—	—	7	15
Georgia	1	1	4	1	—	—	1	1	9	15
Virginia	2	2	—	2	1	—	—	3	6	14
Wyoming	6	2	—	—	3	—	—	1	5	14
Florida	2	2	—	1	—	—	—	1	9	13
Arizona	8	1	—	2	—	—	—	—	1	12
Mississippi	2	1	—	2	—	—	—	—	9	11
Louisiana	—	4	—	2	—	—	—	—	4	10
Oregon	3	4	—	1	—	1	—	—	2	10
Alabama	2	1	1	2	—	—	1	2	1	9
Vermont	3	1	1	1	—	—	2	1	1	9
New Mexico	4	2	—	1	—	—	1	—	—	8
North Dakota	5	1	—	1	—	—	—	—	1	8
Philippines	1	2	—	3	—	—	—	1	3	7
Rhode Island	3	1	1	—	—	—	—	—	3	7

SUMMARY BY STATES AND BY SCHOOLS AND COLLEGES

	Lit., Sci. and Arts.	Eng. and Arch.	Medicine.	Law.	Pharmacy.	Homoeopathic	Dental.	Graduate.	Summer Session.	Total.
Hawaii	3	—	—	2	—	—	—	—	6	6
Maine	1	1	—	1	—	—	—	3	—	6
Nevada	3	2	—	1	—	—	—	—	2	6
Utah	2	2	1	1	—	—	—	—	—	6
New Hampshire	2	2	—	—	—	—	—	—	3	5
North Carolina	2	—	—	2	—	—	—	—	—	4
South Carolina	—	—	1	—	—	—	—	—	—	1
China	8	11	6	—	—	—	—	5	34	46
Ontario	11	16	—	2	—	—	10	2	7	45
South Africa	1	—	—	—	—	—	24	—	8	25
Chile	—	8	—	—	—	—	—	1	6	11
Japan	4	3	2	—	—	—	—	1	2	10
India	—	1	3	—	1	—	—	—	—	5
Turkey	1	2	1	—	—	—	1	—	—	5
Brazil	—	3	—	—	—	—	—	—	2	4
Germany	—	2	—	—	—	1	—	1	1	4
Greece	—	3	—	—	—	—	—	1	—	4
Argentina	—	2	—	—	—	—	—	1	1	3
Armenia	—	2	1	—	—	—	—	—	—	3
Peru	1	2	—	—	—	—	—	—	—	3
Bulgaria	1	1	—	—	—	—	—	—	2	2
Mexico	—	2	—	—	—	—	—	—	—	2
Nicaraugua	—	—	2	—	—	—	—	—	1	2
Poland	—	1	—	—	—	—	—	1	—	2
Russia	1	—	—	—	1	—	—	—	—	2
Saskatchewan	1	—	—	—	1	—	—	—	—	2
Colombia	1	—	—	—	—	—	—	—	—	1
Cyprus	—	—	—	1	—	—	—	—	1	1
Denmark	—	1	—	—	—	—	—	—	—	1
Ecuador	—	1	—	—	—	—	—	—	1	1
England	—	—	—	—	—	—	—	—	1	1
Holland	1	—	—	—	—	—	—	—	—	1
Honduras	—	1	—	—	—	—	—	—	—	1
Manchuria	—	1	—	—	—	—	—	—	—	1
Manitoba	—	—	—	—	—	—	—	—	1	1
Norway	—	—	—	—	—	—	—	1	—	1
Nova Scotia	—	—	1	—	—	—	—	—	—	1
Panama	—	1	—	—	—	—	—	—	—	1
Persia	—	1	—	—	—	—	—	—	1	1
Siam	—	—	—	—	—	—	—	1	—	1
Spain	—	—	—	—	—	—	—	—	1	1

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